THE PURCHASE OF GAS & WATER WORKS

Arthur Silverthorne

Capio Lumen

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THE TRANSFER OF GAS WORKS TO LOCAL AUTHORITIES.

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CROSBY LOCKWOOD & Co., 7, STATIONERS' HALL COURT, LONDON, E.C.

THE PURCHASE

OF

Gas and Water Works,

WITH

THE LATEST STATISTICS

OF

MUNICIPAL GAS AND WATER SUPPLY.

BY

ARTHUR SILVERTHORNE,

CONSULTING ENGINEER.

LONDON:
CROSBY LOCKWOOD & Co., 7, STATIONERS' HALL COURT.

1881.

INTRODUCTION.

It would have been quite impossible to present, with any degree of accuracy, some of the information condensed here without the assistance of the Local Authorities themselves. That co-operation has, I may add, been contributed with all the liberality which distinguishes our great municipalities, and I desire while apologizing for any shortcomings in these pages to express to the Mayors, Town Clerks, Engineers, and Borough Treasurers in the different localities my very sincere acknowledgments for the trouble they have taken in furnishing me with accurate information. I am sure it will be felt that the source from which the information is drawn adds considerably to its value. In item 12 of the Statistics it should be explained that "net profit" means, usually, the net profit after payment of annuities or interest—*i.e.*, surplus profits for application to the redemption of capital and relief of rates. Owing to the manner in which some borough accounts are made up this explanation was necessary.

ARTHUR SILVERTHORNE.

1, WESTMINSTER CHAMBERS,
VICTORIA STREET, LONDON, S.W.,
March 1881.

GAS SUPPLY.

I. THE PURCHASE OF GAS WORKS.

II. STATISTICS OF GAS UNDERTAKINGS UNDER THE MANAGEMENT OF LOCAL AUTHORITIES.

III. STATISTICS OF LONDON GAS UNDERTAKINGS UNDER THE MANAGEMENT OF LOCAL COMPANIES.

THE PURCHASE OF GAS WORKS.

"In the manufacture of gas, as in all other branches of industry, there has been a gradual and successive improvement ever since its first introduction—an improvement tending, on the one hand, to increase the brilliancy and efficiency of the light, and, on the other, effecting economy in the working."

Treatise on Gas Works and Coal Gas.—SAMUEL HUGHES.

IT is now some years since I first ventured to draw attention to the excellent results which were beginning so far back as the year 1870 to attend the management of gas works by local authorities, and to recommend these enterprises more particularly as a means for alleviating local taxation and promoting what is an essential necessity of household comfort—cheap and good gas. It may be a matter of surprise to some people, but it is a recorded fact, that fewer projects meet with more organized opposition than the transfer of a gas works; this measure, notwithstanding the advantages it promises to confer ultimately, is always viewed with considerable distrust by a large section, who jealously watch and would always resent any increase of responsibilities by our local governing bodies. This opposition is not merely local, but extends even to the Legislature, which has never afforded any facilities for transfers, and has not unfrequently rejected schemes that would have insured a large reduction of local taxation to the communities promoting them.

Yet the event has since proved that nothing could be more felicitous than the way in which our municipal authorities have managed even the largest gas undertakings confided to their care, and I fearlessly assert that the unpaid bodies have achieved far superior results to those obtained under the directorate of public companies. There are various reasons for this, of course, but foremost amongst them must be reckoned the integrity, the unflinching zeal, and the enlightened views which gas committees, I find, bring to bear upon all that concerns their undertakings. The gas committee is invariably formed of the best men in a town council; a deal of confidence is thereby inspired, and this stimulates the undertaking itself—greater development is invariably the result, and the quicker an undertaking increases so will the best anticipations of the concern be more speedily realized,

which accounts for a good deal of improvement that may be sought for elsewhere in vain.

I believe, however, that the labours of our municipal authorities are beginning to receive a far greater share of attention than has hitherto been the case, and it is satisfactory to note that their active share in gas and sanitary schemes has greatly contributed to such recognition in several prominent instances.

In a few graceful sentences, while replying to an address from the Corporation of Perth, in 1879, Mr. Gladstone paid a just and well-merited compliment to our municipal bodies in general which is deserving of more than passing notice :—

"I always am glad to have the opportunity of assuring municipal authorities," said Mr. Gladstone, "with what regard, I might even say with what devotion, I look on the institutions of local government of this country. Without these institutions of local government this country would not be what it is. These institutions not only provide for the best transactions of affairs, but they likewise constitute ties of attachment between the community and its most eminent, trusted, and distinguished members. They open the channel through which the citizens of particular communities come forward from a provincial to an imperial position. They train up in those important, though more contracted spheres, those qualities of manhood, discretion, intelligence, and general ability which enable many, in virtue of that training, when called upon, as it may be from time to time, and I hope it will often be, of representing those communities in the Imperial Assembly, and qualify them there and then to discharge admirably well whatever duties may be required."

Upon the more specific subject to which our remarks apply, the transfer of gas works, Mr. Gladstone's views have often been sought, and it has been asserted, with more or less foundation, that he viewed with some jealousy the conduct of commercial undertakings by public authorities and representative bodies. On one occasion (Oct. 1878) he very courteously informed the writer that this was, indeed, an erroneous assumption. Each case, Mr. Gladstone thought, must be tried on its own merits, and he concluded by adding, "I incline to a favourable view of such combinations as you would recommend, so far as a general rule can be laid down."

The editor of a most able scientific paper, the recognized organ of the gas companies in this country,* declared on this occasion that he "was perfectly certain that a sound financier like Mr. Gladstone would not impose a tax in disguise upon gas consumers, and that the object of the writer was to persuade corporations to *confiscate* gas under-

* "The Journal of Gas Lighting, Water Supply, and Sanitary Improvement."

takings, in order that they might appropriate the profits to what is called the relief of rates."

This forcibly represents the argument invariably relied upon by the opponents of transfers: but it will be shown presently that the unfelicitous expression "to confiscate" is quite inapplicable to the extravagant terms which have been secured by gas companies for their undertakings in this country.

It is, no doubt, very unfortunate for some gas companies that, so long as they will not dispose of their undertakings on reasonable terms, they are not only contributing to divert large sums of money from the relief of local taxation or the redemption of capital, but are also depriving the community of a cheaper and a better supply. The relief of local taxation is not a thing to be treated contemptuously; it is, I maintain, a great and pressing necessity. The removal and maintenance of enlarged cemeteries, new and improved modes of paving; new schemes for drainage, strenuously insisted on by the Local Government Board, in the interest of the public health; the construction and maintenance of expensive sewage farms, all of which may be considered as unproductive works, are annually increasing the burthen of local taxation to a degree that must engage serious attention. This increased taxation—although, to the credit of the country, it is borne with commendable spirit—has not altogether escaped the attention of statesmen, who have recommended, at various times, some State aid in reduction of these burthens. But this device can claim, at most, the merit of an adjustment between local with imperial taxation; it does not constitute an actual relief from taxation. Actual relief from taxation should spring, in our opinion, from the increased development of the resources of local undertakings, which previously, from inefficient working or other causes, have not contributed to their fullest value.

A familiar illustration of this is that of a gas company which, from one year's end to another, continues to earn without intermission an average dividend, say, of 8½ per cent. (ranging between 7½ and 10 per cent. upon its share capital) for its shareholders, upon every invested £100 of capital in the undertaking, because it is limited under the provisions of the Gas Works Clauses Act to those dividends, but does nothing whatever to secure the redemption of that £100, which may go on in perpetuity so long as the company are in occupation.

This amount of capital, in reality, is capable of earning, under municipal management, a much larger return of profit; in some instances, as tested by experience, as much as £17 per cent., and the application of it made by the town council will be fourfold: 1st. The integral payment of the original company's interest in the undertaking, £8 10*s.* per cent.; 2nd. The reduction in price of gas from

that previously charged by the company, £3 5*s.* per cent.; 3rd. The redemption of capital through which the £100 will ultimately be extinguished, £2 15*s.* per cent.; 4th. The balance applied to the relief of rates, *i.e.*, £2 10*s.* per cent.

Be it observed that there is no confiscation, the company receiving in perpetuity in the form of annuities the maximum it is entitled to by statute. The gas consumer receives a substantial reduction in the price of gas, which disposes of the fanciful assertion that he is being taxed in any form. The redemption of capital, for which the Legislature, in the case of companies, does absolutely nothing, is provided for on terms varying from 30 to 80 years.

The contention that the balance should be duly applied to the relief of rates derives much force from this, that it is a fair increment of value, and not the result of maintaining a high price for gas, since a lower price is invariably charged. No good can come of unduly cheapening an article of public consumption like gas, since it tends to increasing waste and wanton use; whilst thrift is what is best calculated to advance the interests of the artisan classes; added to which those towns where the largest sums have been devoted to the relief of taxation charge already, in some instances, as low as 2*s.* 9*d.* per 1,000 feet for sixteen-candle gas.

The application of the profits arising out of municipal management of gas undertakings is, however, a question that may well be left to the discretion of the corporations themselves, for, whatever their immediate application may be, they may be reckoned in the end always to benefit the community in a more or less direct manner.

It was mentioned at the beginning of these remarks that the Legislature had done nothing to facilitate transfers. This applies more particularly to England and Ireland, for in Scotland the enactment of the Burghs Gas Supply (Scotland) Act, 1876, confers powers on the local authorities adopting it which, excluding the city of Edinburgh, admit of every gas company in Scotland being compulsorily purchased on terms settled by arbitration, if not previously agreed.

The chief difficulty which corporations seeking to acquire gas undertakings in this country have invariably had to contend against has been the exorbitant prices asked for them, and previous to 1872 the corporations had availed themselves of competing Bills, in which they threatened the virtual extinction of the companies through introducing a competing and cheaper supply. In this manner the cities of Glasgow, Leeds, Rotherham, and Aberdeen, during the years 1869, 1870, 1871, applied to Parliament not only for Bills empowering them to acquire the undertakings of the gas companies, but also for powers to erect new works and introduce an independent supply of gas. In each of these instances the gas companies, although presenting

a strenuous opposition before Committee, were nevertheless ultimately compelled to accept the terms offered by the corporations, on finding that the Parliamentary Committee considered them fair, and that in the event of their being declined would in all probability have sanctioned the corporation schemes.

In this manner transfers on reasonable terms were in several instances actually secured, and they were undoubtedly due to the operation of the competing scheme.

The Municipal Corporation (Borough Funds) Act, 1872, was passed with a view of entirely modifying the conditions under which any local authority could apply borough funds to the promotion of private Bills. It had been previously alleged that this application was contrary to Statute; and the condition under which borough funds may still, under the Municipal Borough Funds Act, be applied to the promotion of Bills is "so long as they are not promoted for the establishment of any gas or water works to compete with any existing gas or water company." With the advent of this Bill, consequently, competing new works Bills finally disappeared; and incorporated companies having virtually the corporations seeking their undertakings entirely at their mercy, it is hardly surprising to find that some very onerous purchases have been made from time to time on what is called facetiously "terms agreed."

The Public Health Act, 1875, however, enables an urban authority to erect gas works under certain definite stipulations—*i.e.*, by Sec. 162, where there is not any company or person authorized by Parliament to supply gas for public and private purposes supplying gas within any part of the district of such authority, the urban authority may themselves undertake to supply gas for such purposes or any of them throughout the whole or any part of their district; and if there is any such company or person so supplying gas, but the limits of their supply include part only of the district, then the urban authority may themselves undertake to supply gas throughout any part of the district not included within such limits of supply.

This Act also affords an opportunity to urban authorities for acquiring gas undertakings situate within their own districts upon such terms as may be agreed on between such authority and the company, with the sanction of the Local Government Board.

Nearly without exception all the purchases since 1872 have been "on terms agreed" or under the voluntary system. The inordinate length and cost of arbitration has contributed in a great measure to this result, and as a consequence some of the principal rules of value have been greatly neglected; and now, consequent upon the remarkable success attending some corporation gas undertakings, every imaginable device is resorted to, to swell the value of the undertaking, these taking

frequently the extravagant form of claims for prospective value, back dividends, compulsory purchase, &c., or even unissued capital. These, in addition to what would not have been conceded a few years ago —namely, maximum statutory dividends on all issued capital. Although the local authorities have in the long run rejected unworkable transfers, it is unfortunate that others have been induced to concede claims which form dangerous precedents, whilst they also discount their own prospects of success and the greater benefits which might otherwise legitimately accrue to the community interested.

Incorporated gas companies almost invariably claim to be entitled now to maximum statutory dividends; but since the Legislature does not impose upon them any restrictions with regard to the redemption of capital, and since the Legislature *has imposed* upon corporations the responsibility of extinguishing both annuities and interest resulting out of the transfers of gas undertakings, it must follow that the company ought not to receive the statutory dividend, but that amount, less the sinking fund, required to extinguish the annuity, say, in sixty years.

This objection may be repeated in another equally potent shape by noticing that gas companies never put aside anything for depreciation of plant, as practised in the working by local authorities. If this were done, I doubt if it would interfere at all with dividends paid, but it would materially add to the prosperity of the concern by reducing the ordinary capital expenditure.

It is quite optional to the local authorities to attempt compulsory purchases of gas undertakings, but it is curious that since 1872 there have been but two serious attempts made to acquire gas works compulsorily. The Ramsgate Local Board, in 1876 and following Session, promoted a Bill to compel the Isle of Thanet Gas Light Company to sell the Ramsgate section of their undertaking, which was decisively rejected by the Committee sitting on the Bill. I attach, however, no importance to the fact that eventually a satisfactory arrangement was made, and that the local board is now in possession of both gas and water works. In the same Session the Hanley and Ashton-under-Lyne Corporations promoted compulsory Bills, which were both rejected by the same Committee, forming consequently but one precedent. The Stafford Corporation in 1876 promoted a Bill for the compulsory purchase of their gas undertaking which was actually unopposed by the company, and upon the basis of which the transfer was conducted in 1878.

Sound judgment requires undoubtedly to be exercised in appealing to Parliament for the compulsory purchase of a gas undertaking. Considerable disadvantage will attach to the attempt if the company is not before Parliament with some Bill of their own; and compulsory

Bills should not be promoted unless the company is in the position of having nearly exhausted their authorized issue of capital.

If corporations would attend to these details, I believe that compulsory Bills might be submitted with confidence to Parliament—more especially the present Parliament, which has not committed itself yet to any decision on this point. Compulsory purchases are attended with one great advantage — namely, that the company have to disclose the condition and extent of the undertaking, and the local authorities can then estimate accurately the value of the manufacturing plant they are about to purchase, and the sum it is worth; whilst, in the purchases "on terms agreed," it is notorious that, although they receive privately every assurance that the undertaking is equal to requirements, it soon is discovered, upon entering into possession, that the chief inducement for the company to sell was that the capabilities of the undertaking are nearly exhausted, and that they would have had to put up shortly new works. This duty is, therefore, bequeathed to the local authorities; but it would conduce greatly to their advantage to know the full extent of this serious liability before the arrangements are concluded.

No purchase ought ever to be completed without the undertaking has been very carefully surveyed and valued by an experienced expert, who should make it his chief business to determine accurately the capabilities of the plant to meet the anticipated increase in supply, as sound gas undertakings never remain stationary, except under very unusual circumstances.

In estimating the value of any undertaking maximum dividends should certainly be discarded, as the profitable nature of a transfer depends upon the greater or lesser amount of capital that may happen to have been engaged in the company's undertaking. By reducing the datum down to gas sold per 1,000 feet, a safer and more reliable approximation may be obtained. It does not unfrequently happen at the present time that the cost of coal and manufacture and distribution of gas, exclusive of capital charges, amount to 1*s.* 11*d.* per 1,000 feet sold, so that, if the capital charges do not exceed 10 or 13 pence, this will enable the gas to be supplied to the consumer from 2*s.* 9*d.* to 3*s.* per 1,000 feet.

Therefore, taking this as a typical case of what is scarcely cheap gas, it is perfectly correct to reckon any transfer of *efficient* works a high-priced purchase, in which the purchase-money and interest on loan-capital works out higher than *thirteen pence per* 1,000 *feet of gas sold.*

It is to illustrate this more particularly that the following table has been prepared, affording, in the first section, particulars of those transfers previous to 1872; and, in the latter part, those subsequent to that date, in which the proportionate increase in the purchase terms alluded to previously is made sufficiently clear.

I.—*Transfers previous to the passing of the Municipal Borough Funds Act*, 1872.

Date of Transfer.	Name of Gas Company and Gas sold per Annum in Cubic Feet.	Price of Gas.	Annuities or Purchase-money paid upon Company's Paid-up Capital.	Annuities.	Interest.	Amount required to pay Annuities and Interest per 1,000 Feet sold.
		s. d.	£	£	£	*Pence.*
1868	Dundee Gas Light Co. 105,236,202	5 4	Original Share Capital (percentage unlimited) 29,687 9¾ p.c. an. New do. 1867 (7 p.c.) 50,000 6½ p.c. an. Morts. (paid off). 79,687	6,125	Nil	13·98
				6,125		
1868	Dundee New Gas Light Co. 51,739,100	5 2 5 4	Original Share Capital (10 p.c.) . . . . . 40,000 4¾ p.c. an. New do. 1867 (7 p.c.) 15,000 4¾ p.c. an. Mort. £118,119. 55,000	2,537	774	15·46
				3,311		
1869	Glasgow Gas Co. 541,950,000	4 7	Old Stock (10 p.c.) 150,000 9 p.c. an. New Stock (7½ p.c.) 65,000 6¾ p.c. an. Mort. £70,000. 215,000	17,887½	2,975	9·24
				20,682½		
1869	Glasgow City and Suburban 421,000,000	4 7	Old Stock (10 p.c.) 150,000 9 p.c. an. New Stock (7½ p.c.) 50,000 6¾ p.c. an. Mort. £50,000. 200,000	16,875	2,125	10·83
				19,000		
1870	Leeds Gas Light Co. 310,000,000	3 9 3 6	Con. Stock 6 p.c. 23⅓ years' purchase 255,250 = £366,108 15*s.* 7*d.* Mort. . . . £42,500 Deb. Stock . 15,000 £57,500	Interest at 4¼ 15,560	2,587½	14·04
				18,147½		
1870	Leeds New Gas Light Co. 312,000,000	3 9 3 6	Con. Stock 6 p.c. 23⅓ years' purchase 224,939 = £330,334 16*s.* Deb. Stock £59,285.	14,039	2,668	12·85
				16,707		
1870	Rotherham Gas Light Co. 40,584,800	3 9	Share Capital (10 p.c.) 7,500 Do. new (8 p.c.) . . 20,000 24 years' purchase = £56,400 27,500 Mort. £5,000.	Interest at 4¼ 2,397	237 10*s.*	15·60
				2,634 10*s.*		
1871	Aberdeen Gas Light Co. 110,000,000	5 10 5 5	Share Capital (10 p.c.) 65,000 10 p.c. an.	6,500	Nil	14·13
				6,500		

Transfers previous to the passing of the Municipal Borough Funds Act, 1872.

Date of Transfer.	Name of Gas Company and Gas sold per Annum in Cubic Feet.	Price of Gas.	Annuities or Purchase-money paid upon Company's Paid-up Capital.	Annuities.	Interest.	Amount required to pay Annuities and Interest per 1,000 Feet sold.
		s. d.	£	£	£	*Pence.*
1871	Perth Gas Light and New Gas Light Cos. 32,500,000	5 10	Share Capital (percentage unlimited) . 45,000 6¼ p.c. an.	2,812½	Nil	26·85
				2,812½		
1871	Bradford Gas Light Co. 540,793,420	3 0	Share Capital (10 p.c.) 55,000 £95 for every £25 Share = £210,000.	Interest at 4¼ p.c. 8,925	Nil	3·96
				8,925		
1871	Arbroath Gas Light Co. 21,346,500	5 10	Share Capital. . . . 20,000 7 p.c. an. Mort. Debt £4,450. Payment to Premium and Res. Fnds. £1,200.	1,400	240	18·43
				1,640		
1872	Kilmarnock Gas Light Co. 27,952,000	5 0	Share Capital (10 p.c.) 15,000 New do. (7½ p.c.) . . 9,000 P'chse.-mny. £36,000. Mort. £4,500. 24,000	Interest at 4¼ p.c. 1,530	177 15*s.*	14·66
				1,707 15*s.*		
1872	Bolton Gas Co. 304,385,000	3 4 3 10	Old Shares (10 p.c.) 64,498 10 p.c. an. New do. (6½ p.c.). . 123,189 6½ p.c. an. 187,687 Premium of £2 per Share on 11,375 Shrs. = £22,750.	£ *s. d.* 14,460 4 11	967	12·17
				15,427 4*s.* 11*d.*		
1872	Huddersfield Gas Co. 150,000,000	3 0	Share Capital (10 p.c.) 48,000 Do. New (5 p.c.) . . 21,000 Mort. £8,100. Max. Dividends £5,850 × 24 years' purchase = £140,400. 69,000 Res. Fnd. £16,856.	Interest at 4¼ p.c. 5,967	344	10·10
				6,311		
1872	Hereford Gas Co. 39,360,000 (1871)	4 0	Share Capital (percentage unlimited) . 6,000 £861 for every £100 Share = £51,665.	Interest at 4½ p.c. 2,325	Nil	14·17
				2,325		

2.—*Transfers following the passing of the Muncipal Borough Funds Act*, 1872.

Date of Transfer.	Name of Gas Company and Gas sold per Annum in Cubic Feet.	Price of Gas.	Annuities or Purchase-money paid upon Company's Paid-up Capital.	Annuities.	Interest.	Amount required to pay Annuities and Interest per 1,000 Feet sold.
		s. d.	£	£	£	*Pence.*
1873	Dewsbury and Batley Gas. Co. 74,224,000 (Batley)	3 9	Ordinary Shares (10 p.c.) . . . . . 37,000 New do. (7½ p.c.) . . 93,000 Max. Div. £10,675 × 25 years' purchase = £266,875. 130,000	—	—	20·30 (Batley)
1874	Wigan Gas Co. 110,125,900	3 10	Sha. Capital (10 p.c.) Do. do. (7½ p.c.) } 75,000 Do. do. (5 p.c.) Yearly profit (1)— £5,781 5*s.* × 22½ years' purchase = £130,078 2*s.* 6*d.*	Interest at 4½ p.c. 5,535	Nil	12·06
				5,535		
1874	Nottingham Gas Co. 572,417,400	3 4 3 2¾ 3 1½	Stock (7,242 Shares, 5½ p.c.). . . . . 369,434 6½ p.c. an. to 1881. 6¼ p.c. an. (subsequently). Reserve Fund— £23,652 18*s.* 10*d.* Mort. £40,000.	22,442	1,600	10·09
				24,042		
1874	New Neath Gas Co. 14,796,200	5 6	Share Capital (limited to 10 & 7 p.c.) . . . 26,700 Purchase-money— £33,289 18*s.* 6*d.*	Interest at 4½ p.c. 1,414	Nil	22·95
				1,414		
1874	Leigh District Gas Co. 23,011,182	5 6	Share Capital (10 p.c.) 24,000 20 years' purchase of Max. Div. £2,400 × 20 = £48,000.	Interest at 4½ p.c. 2,040	Nil	21·25
				2,040		
1874	Belfast Gas Co. 355,539,000 (1872)	4 6	Share Capital (10 p.c) 106,000 New do. (7 p.c.) . . 94,000 22½ years' purchase ∴ Max. Div. 200,000 17,180 × 22½ = £386,550. Deb. £48,500. Reserve Fund £14,000.	Interest at 4½ p.c. 17,394	1,940	13·05
				19,334		
1875	Birmingham and Staffordshire Gas Light Co. 1,539,722,000	3 6	Share Capital (10 p.c.) 320,400 10 p.c. an. Do. New (7½ p.c.) . 350,000 7½ p.c. an. Loan Cap. £22,775. 670,400 Co. retained Reserve Fund £39,609. Do. Premium Acc. £10,906.	58,290	900	9·23
				59,190		

Transfers following the passing of the Municipal Borough Funds Act, 1872.

Date of Transfer.	Name of Gas Company and Gas sold per Annum in Cubic Feet.	Price of Gas.	Annuities or Purchase-money paid upon Company's Paid-up Capital.	Annuities.	Interest.	Amount required to pay Annuities and Interest per 1,000 Feet sold.
		s. d.	£	£	£	*Pence.*
1875	Birmingham Gas Co. 800,404,000	3 6 3 4 3 2 3 0	Share Capital (9 p.c.) 100,000 Do. New (7½ p.c.). . 200,000 18¾ years' purchase —— Max. Div. £24,000 300,000 ∴ £24,000 × 18¾ = £450,000. Mort. Debt 90,000. Reserve Fund £6,000.	Interest at 4 p.c. 18,000 21,600	3,600	6·47
1876	Padiham Gas Light Co. 14,494,200	3 11 to 5 0	2,400 Shares (7½ p.c.) 12,000 464 do. do. 928 8½ p.c. an. —— Mort. £950. 12,928	1,099 5*s.* 4*d.* 1,137 5*s.* 4*d.*	38	18·82
1876	St. Helens Gas Co. 83,236,373 (1876)	4 0	4,600 £10 Shares (10 p.c.) . . . . . 46,000 1,200 do. (7 p.c.) . . 12,000 22½ years' purchase of Max. Div.— 58,000 ∴ £122,400 + Bonus of £2 per Sh. on 10 p.c. Shrs. 9,200 131,600 Mort. Debt £11,500 at 4½ p.c.	Interest at 4½ p.c. 5,593 6,110 10*s.*	517 10*s.*	17·62
1876	Maryport Town and Harbour Gas Co. 10,048,500	4 0	Capital expended . . 13,880 Umpire's award "in arbitration" £15,445 Stock of Mains, &c.— £256 17*s.* 8*d.*	Interest at 4½ p.c. 656 656	Nil	15·70
1876	Horncastle Gas Co. 8,711,000 (1875)	5 10	Original Shares (10 p.c.) 3,000 New do. (5 p.c.) . . 8,000 Umpire's award "in arbitration"— 11,000 £13,668 14*s.* 6*d.*	Interest at 4½ p.c. 581 581	Nil	16·00
1877	Longton Gas Co. 48,430,000 (1876)	3 6	Share Capital (10 p.c.) 20,000 Do. (7 p.c.) . . . . 20,000 Loans £3,150. —— 20 years' purchase 40,000 Max. Dividends— ∴ 20 × £3,400 = £68,000 Bonus paid . . 2,000 70,000	4 p.c. Stock 2,800 2,941 15*s.*	141 15*s.*	14·56

Transfers following the passing of the Municipal Borough Funds Act, 1872.

Date of Transfer.	Name of Gas Company and Gas sold per Annum in Cubic Feet.	Price of Gas.	Annuities or Purchase-money paid upon Company's Paid-up Capital.		Annuities.	Interest.	Amount required to pay Annuities and Interest per 1,000 Feet sold.
		s. d.		*£*	*£*	*£*	*Pence.*
1877	Burslem and Tunstall Gas Co.	4 0	Share Capital (10 p.c.) Do. (7½ p.c.) . . . . Do. (7 p.c.) . . . . 28¼ years' purchase of Max. Dividends— ∴ £2,835 × 28¼ = £80,000.	8,000 15,000 13,000 36,000	Interest at 4¼ p.c. 3,400	Nil	No data
					3,400		
1877	Warrington Gas Co. 102,005,200	4 0 4 6 5 0 5 6	Share Capital (10 p.c.) (1,800 Shrs.) 10 p.c. an. New Capital (7 p.c.). (3,600 Shrs.) 8¼ p.c. an. Bonded Debt £5,350 Bonus paid . . 2,700 10*s.* per Share on 5,400 Shares.	36,000 28,800 64,800	6,120	342	15·20
					6,462		
1877	Dukinfield Gas Co. 61,875,710 (1878)	—	Share Capital. . . . 10 p.c. an.	30,000	3,000	Nil	11·67
					3,000		
1877	Isle of Thanet Gas Co. (Ramsgate) 69,235,000 (1878)	4 2	Share Capital applying to Ramsgate Section . . . . . . Purchase-money— £65,000. Stock, &c. . 1,531.	no data	Interest at 4¼ p.c. 2,762	Nil	9.59
					2,762		
1877	Colne Gas Light Co. (Lanc.) 24,000,000	4 2 3 9 3 6	675 £20 Sh. (10 p.c.) Purchase-money— £32,000.	13,500	Interest at 4¼ p.c. 1,360	—	13·50
					1,360		
1877	Penrith Gas Light Co. 14,796,375 (1876)	4 10 P.L. 3 8	Share Capital (10 p.c.) Loans . . . £1,200. Arbitrator's award— £18,647 1*s.* 7*d.*	9,480	Interest at 4¼ p.c. 792	48	13·64
					840		
1877	Alloa Gas Co. 18,159,319	5 0	Share Capital (15 p.c.) Arbitrator's award "in arbitration" £23,250.	10,000	Interest at 4¼ p.c. 988	Nil	13·05
					988		

Transfers following the passing of the Municipal Borough Funds Act, 1872.

Date of Transfer.	Name of Gas Company and Gas sold per Annum in Cubic Feet.	Price of Gas.	Annuities or Purchase-money paid upon Company's Paid-up Capital.	Annuities.	Interest.	Amount required to pay Annuities and Interest per 1,000 Feet sold.
		s. d.	£	£	£	*Pence.*
1877	Blackburn Gas Co. 285,580,900	3 9 4 0 4 3	A Shares (10 p.c.) . . 90,000 B do. (7½ p.c.) . . . 90,000 C do. (7 p.c.) . . . . 58,035 10, 7½, and 7 p.c. an. Bonus paid— 238,035 £64,624 10*s.* Loans £31,870.	19,812 9*s.*	4,101	20·09
				23,913 9*s.*		
1878	Leicester Gas Co. 426,697,000	3 0 3 6 2 11 2 10 2 8	A Shares (8 11/13 p.c.) . 50,700 10 10/11 p.c. an. B Shares (7½ p.c.) . . 69,300 8 4/7 p.c. an. C Shares (7 p.c.) . . 100,000 8 p.c. an. Deb. £20,000 at 4½. 220,000 Reserve Fund— £15,988 19*s.* 9*d.*	£ *s. d.* 19,065 14 3	900	11·23
				19,965 14*s.* 3*d.*		
1878	East Retford Gas Co. 19,333,300	3 10	2,400 £5 Shares (10 p.c.) . . . . . 12,000 Loans £3,600. Purchase-money, 20 years' purchase— ∴ £1,200 × 20 = £24,000.	Interest at 4½ p.c. 1,020	127 10*s.*	14·25
				1,147 10*s.*		
1878	Mansfield Gas Light Co. 28,849,830	5 0 4 9 4 5 3 11	300 Shares £50 = (10 p.c.) . . . . . 15,000 Mort. £1,000. Purchase terms, a Debenture Stock at 4 p.c. = £37,500.	Stock at 4 p.c. 1,500	40	12·81
				1,540		
1878	Stoke, Fenton, and Longton Gas Co. (Stoke and Fenton) 76,578,286 (1879)	3 6	Share Capital (10 p.c.) 34,000 Mort. £350. Purchase-money, 25 years' purchase— ∴ 25 × £3,400 = £85,000. Co. retained Res. Fnd. £5,000.	Interest at 4½ p.c. 3,612	14	11·35
				3,626		
1878	Saffron Walden Gas Co. 6,000,000	—	463 Shares £20 (Div. 5 p.c.) . . . . . 9,260 Purchase-money— £10,300.	Interest at 4½ p.c. 437 15*s.*	Nil	17·51
				437 15*s.*		

Transfers following the passing of the Municipal Borough Funds Act, 1872.

Date of Transfer.	Name of Gas Company and Gas sold per Annum in Cubic Feet.	Price of Gas.	Annuities or Purchase-money paid upon Company's Paid-up Capital.	Annuities.	Interest.	Amount required to pay Annuities and Interest per 1,000 Feet sold.
		s. d.	£	£	£	*Pence.*
1878	Ilkeston Gas Co. 12,750,000	—	Share Capital (p.c.) 12,048 Purchase-money— £25,600	Interest at 4½ p.c. 1,152	Nil	21·74
				1,152		
1878	Clitheroe Gas Co.	—	A B Shares (5 p.c.) . 2,000 C D do. (10 p.c.) . . 3,750 Ordinary Share Capital (7½ p.c.) . . . . . 13,475 5, 10 & 7½ p.c. an. Bonus pd. £2,887 10*s*. 19,225 Back Div. . 437 10*s*. 3,325 0	1,480 12 6	141	no data
				1,621 12*s*. 6*d*.		
1878	Stafford Gas Co. 52,000,000 (est.)	2 10	Old Share Capital £ *s. d.* (10 p.c.) . . . 13,333 6 8 New do. (8 p.c.) 13,333 6 8 Deb. Bonds— £4,983 6*s*. 8*d*. 26,666 13 4 at 4½ p.c., Total £31,650. Purchase-money— 29⅛ years' purchase ∴ £2,400 × 29⅛ = £70,000.	Interest at 4½ p.c. 2,975	224	14·77
				3,199		
1878	Dumfries Gas Co. 31,320,000	5 10 5 0 4 2	Share Capital (10 p.c.) 12,000 Loans at 4½ p.c. £2,800. Purchase-money— £21,000.	Interest at 4½ p.c. 892 10*s*.	119	7·75
				1,011 10*s*.		
1878	Newry Gas Consumers' Co. 21,466,000 (1879)	5 5	Share Capital (p.c.) no data Purchase-money— £28,500.	Interest at 4½ p.c. 1,353 15*s*.	Nil	15·14
				1,353 15*s*.		
1879	Lancaster Gas Co. 46,879,000	—	Share Capital (10 p.c.) 30,000 Loans £7,000. Purchase-money— £80,000.	Interest at 4½ p.c. 3,400	315	19·05
				3,715		

Transfers following the passing of the Municipal Borough Funds Act, 1872.

Date of Transfer.	Name of Gas Company and Gas sold per Annum in Cubic Feet.	Price of Gas.	Annuities or Purchase-money paid upon Company's Paid-up Capital.		Annuities.	Interest.	Amount required to pay Annuities and Interest per 1,000 Feet sold.
		s. d.		*£*	*£*	*£*	*Pence.*
1879	Stratford-on-Avon 22,000,000	4 6	Share Capital (10 p.c.)	3,750	550 15*s.*	597	12·53
			Do. do. (7 p.c.) . . .	6,750			
			Do. Pref. (5½ p.c.) .	3,000			
			Terms—25 yrs. P'chse Max. Dividends— ∴ £1,012½ × 25 = £25,312½	13,500	1,147 15*s.*		
			An. Cap. = £13,768½				
			P'ch. mny. = 11,544				
			Bndd. Dbt— £2,500				
			Res. Fund retnd. by Co.				
1880	Newtownards* (Ireland) 4,723,657	7 6	Share Capital (3,538 Shares)	3,181	Interest at 3½ p.c. 350	Nil	17·79
			Do. do. (2,462 Shares)	1,535			
				4,716			
			Mort. Debts . . .	4,232	350		
			Terms— 16⅔ years' purchase of the net profits £519 3*s.*, £8,652 10*s.* with allowances for Cottages and Surplus Storage = £9,386½	8,948			

* This Transfer is now subject to the Local Government Board of Ireland authorizing a loan for the purpose. An enquiry has since been held, but the result of the Town Commissioners' application was not known up to the date of issue.

In considering the preceding tables, attention should be paid to the fact that the amount required to pay annuities and interest per 1,000 feet sold is derived from the extent of the sale of gas at the period of the transfer, or at any rate from the latest published annual statement preceding it. When subsequently the works have been found exhausted and that further considerable outlays on pressing extensions or new works have had to be made, this has influenced adversely the character of the purchase, and transfers which at first were reputed cheap have frequently been proved to be the reverse.

To attempt ever to starve gas works which require capital to be expended on them would, however, be a very dangerous practice indeed, and local authorities should never hesitate upon spending money in developing an undertaking when they are advised to do so by competent experts. All that is contended for here is the strict necessity for ascertaining correctly the extent of the probable outlay at the time of negotiating the terms of purchase.

It is notorious that two of the cheapest purchases apparently ever made—*i.e.*, Wigan and Dumfries—actually incurred a considerable annual loss, for which they were quite unprepared, until they resolved to expend the required amount of capital upon the extensions and renewal of their plant; and the result of this policy has been that they have done handsomely ever since.

There is no question that, in nearly all the purchases on terms agreed, the chief inducement with the company for coming to a voluntary settlement has been the approaching exhaustion of the works; and to what extent this has influenced the results of several important transfers may be easily appreciated by a glance at their present capital accounts (quoted further on). It will be generally found that the cheapest transfers are those in which the price has been determined by arbitration, where the proper allowances for depreciation and plant, &c., can be entertained by the arbitrators or umpire.

In one of the latest transfers on record—*i.e.*, Newtownards—the Town Commissioners have acquired the works for a relatively small amount, the works being modern and equal to nearly double their present production. The proper allowances for depreciation of buildings, plant, mains, &c., were in this case conspicuously insisted upon on behalf of the Town Commissioners, and although the Newtownards Gas Company valued their undertaking at £14,263 12*s.* 9*d.*, through Mr. George Anderson, the engineer of the Cork Gas Company, the Company agreed to accept, eventually, the valuation of the Town Commissioners. This valuation, made in anticipation of an arbitration, was nearly £5,000 less than the Company's figure.*

* The valuation for the Town Commissioners was made by the writer.—A.S.

Notwithstanding the difficulties that some local authorities have to contend against through excessive valuation, there can be no question that those undertakings which have been acquired upon anything like reasonable terms have prospered in a remarkable degree during the last few years.

The Birmingham gas transfers, although as recent as 1875, confirm this in an abundant degree. Two companies were supplying Birmingham—cheaply, it must be conceded,—who for several years were barely able to pay maximum dividends on comparatively low capitals. The prospects of purchase were by no means striking, and would have altogether failed to commend themselves to the notice of any not endowed with the financial aptitude and brilliant administrative talent of the promoter of this successful scheme. Under these circumstances, nevertheless, the present President of the Board of Trade, Mr. Joseph Chamberlain, M.P., induced the Birmingham Town Council to authorize him to enter into negotiations with the Birmingham and Staffordshire and Birmingham Gas Light Companies for the acquisition of their undertakings.

The successful way in which these negotiations were carried out is best illustrated by explaining that Mr. Chamberlain succeeded virtually in securing these two valuable undertakings for the ratepayers of Birmingham, in return for perpetual annuities, equivalent to a charge of only 9¼*d.* per 1,000 feet of gas sold, in the case of the Birmingham and Staffordshire Company; whilst the Birmingham Company was secured upon even lower terms—*i.e.*, 18¾ years' purchase of the maximum dividends, or a charge of 6½*d.* per 1,000 feet of gas sold. This places the acquisition of the Birmingham Gas Companies in the first rank of cheap transfers. The magnitude of this enterprise is greatly enhanced by taking into consideration that the amount of share capital alone invested in these two companies amounted to close upon a million sterling.

The favourable results of the Birmingham Gas Department have occasioned since a good deal of surprise, although at Birmingham they are well understood and thoroughly appreciated. It may not be inopportune to explain that every *penny* in the price of gas is equivalent at Birmingham to a revenue of £10,000; and that in acquiring the undertaking for an *average* outlay of 8*d.* per 1,000 feet of gas sold, when other towns have paid *double* this amount, Mr. Chamberlain was virtually effecting a saving of upwards of £80,000 a year, so far as the ratepayers were concerned. All that was required to reap the benefit of this transaction was good management; and a glance at the latest results of the Birmingham Corporation Gas Department will confirm that this has not been in the least wanting.

The invested capital in the gas companies (£970,000) did no more

previous to the transfers than earn annually £82,290; this capital, subject to a slight nominal increase, earns at present *double* this amount; for the net profits, after payment of annuities and interest, including the value of the reduction in price made by the council —£31,182—amounted in 1879 to £51,116 18*s.* 4*d.* + £31,182 = £82,347 18*s.* 4*d.* It is gratifying to know that the whole of this amount has been most equitably devoted to the benefits of the consumers and ratepayers alike, during the last year's rule of Mr. Chamberlain, as chairman of the gas committee, *i.e.*—

Reduction in price of gas to the consumers - - -	£31,182
Redemption of capital, for the benefit of the undertaking -	26,165
Relief of rates, for the benefit of the ratepayers - - -	25,000
	£82,347

Mr. Chamberlain has since joined Mr. Gladstone's Ministry, and he consequently has had to resign his office of chairman to the Birmingham Gas Committee into other and competent hands; but it may be confidently asserted that to few men it has been given to initiate and complete, within a measurable distance of time, a local scheme attended with so large a degree of success.

In the statistics that follow these remarks, abundant testimony will be found to the success of large and small undertakings; and, having done the fullest justice to the administrative talents of the gas committees, it is equally right to point out how largely these are indebted for their success to the zeal, I might add the devotion, of the engineers at the head of the gas departments. Nothing could be in worse taste than to displace, upon the acquisition of an undertaking, the engineer and chief official originally promoted by the late company. It is pleasant to notice that this has been very rarely done by any local authority; and if any argument were needed to support this view, it is abundantly furnished by the fact that some of the most conspicuous successes in local management have been attained under the management of such eminent engineers as Messrs. John Wilson, D. Swallow, Harrison Veevers, G. A. and C. S. Robinson, B. M. McCrae, Alexander Smith, W. A. Valon, Charles Hunt, John Storer, W. Davis, &c., who all held their appointments from the late companies.

A conspicuous degree of success has attended the operations of the Belfast Corporation Gas Works. The management will compare with that of any undertaking of similar extent in England. The writer last year had, through the kindness of Mr. Stelfox, an opportunity of going over those works, and was much struck by the judgment with which all the extensions have been carried out, every available inch of space being utilized to the best advantage, and the works are replete

with appliances, some of them very ingenious, for the economy of labour. Exhausting apparatus of the most complete kind is also erected here, and I can amply confirm that the favourable aspect of the balance sheets that Mr. James Stelfox presents annually to the gas committee are nothing less than the results which ought to be expected from the very admirable arrangements made for the manufacture of gas throughout the whole of the departments I visited. The Belfast works are also very handsome in appearance and altogether a credit alike to Mr. Stelfox and the corporation.

The Bolton Corporation Gas Works are also very successful, and the share which Mr. Harrison Veevers has had in bringing them to the degree of prosperity they have at present attained must not be overlooked. The works are now under the management of Mr. Fraser, and a better appointment could not have been made, since Mr. Veevers insisted on resigning; but the ratepayers are not likely to forget how much they are really indebted to Mr. Veevers for all he did in promoting the interests of this great undertaking.

Due reference is made elsewhere to the working at Leeds, where eighteen-candle gas is being sold at the remarkably low price of 1*s.* 10*d.* a thousand. Although this policy does not coincide exactly with the views advocated in these pages, it is right to notice that in demonstrating how cheaply gas can be sold, Mr. Woodall, the engineer of the Leeds Corporation Gas Works, is rendering just now an inestimable service to all interested in its supply, and that although his policy appears that of selling gas as cheaply as it can absolutely be made, notwithstanding this, he annually sets aside some £10,000 towards the redemption of capital.

The measure of success which from the commencement attended the operations of the Nottingham gas undertaking has been maintained in a most striking manner, and there can be no question that the Nottingham ratepayers are deeply indebted to Mr. Wilson for the skill and remarkable success with which he has conducted this concern, culminating last year in a surplus of £23,226 14*s.* 5*d.*

For a comparatively small gas works, the results of the Bingley Improvement Commissioners are of a very striking kind. It is a matter worthy of considerable notice that these results have been exclusively associated with Mr. Dunbar Malam's appointment. Better working is not to be met with anywhere, but Mr. Malam is an engineer of considerable attainments in his profession.

The substantial profits attending the operations of some of the smaller undertakings are worthy of much attention. Although they vary a good deal in extent sometimes, this is chiefly due, in many instances, to being without responsible professional advisers; and I

have noticed with satisfaction that those undertakings which retain independent consulting engineers show immeasurably better results.

The particulars concerning the present London gas supply compared with the year 1866 are instructive. Some surprise will doubtless be felt in noticing that in 13 years the principal London gas companies were only able to reduce the price of gas from 4*s.* to 3*s.* 6*d.* Reference is here more particularly made to those numerous companies which have since amalgamated and now constitute the Gas Light and Coke Company. The quantity of gas sold in cubic feet has in that period *doubled* in amount, increasing from 5,586 millions to 11,403 millions; but no benefit has resulted from this remarkable extension of business, for it will be found that both capital and dividends have also *more than doubled.* It is most surprising to find, that while the Legislature usually insist with the utmost rigour upon restricting the limit of dividend on all new capital in the case of every provincial company coming to Parliament, that the dividends of the principal gas company supplying London should have been allowed to increase unchallenged in this proportion.

The dividends paid in the year 1866, £324,590 on a paid-up share capital of £3,570,755, now amount to £653,325 upon a paid-up share capital of £7,372,745.

According to this, the vaunted amalgamations have not contributed the benefit to the public that was expected.

The writer has pointed out on former occasions that the undivided profits of the London gas companies annally exceed £120,000, chiefly devoted to the increase of reserve funds and the commutation of amalgamation pensions; and although the prospect of the acquisition of the London gas undertakings is not greatly favoured at present, it would nevertheless afford, if carried out by a clever negotiator upon a legislative compulsory basis, a source of annual surplus profit to the community which is under-estimated at the figure of £500,000.

During the year 1880 considerable reductions in the price of gas have taken place, the Gas Light and Coke Company first reducing their price from 3*s.* 6*d.* to 3*s.* 4*d.*, and during the current year a further reduction to 3*s.* 2*d.* has been made. The Commercial Gas Company have reduced their price from 3*s.* 3*d.* to 3*s.* The South Metropolitan Gas Company, a company of considerable extent, embracing now nearly the whole of the South London district, has reduced its rate from 3*s.* to 2*s.* 10*d.* These reductions are all governed by the sliding scale, and are made principally to admit of higher dividends being paid to the shareholders upon ordinary share capital. The standard price of the Gas Light and Coke and Commercial Companies is 3*s.* 9*d.*, and an additional dividend of 5*s.* in the £100 per annum for

every penny charged in diminution will entitle them respectively to increased dividends of $1\frac{3}{4}$ and $2\frac{1}{4}$ per cent. per annum. The *full* extra dividend has never yet been divided, however, by the Gas Light and Coke Company, as the directors have usually preferred to add to their reserve fund or to strengthen their balances of undivided profits. The standard price of the South Metropolitan is 3*s.* 6*d.*; consequently an additional dividend of 5*s.* in the £100, corresponding with a two-and-tenpenny charge, entitles them to an increased dividend of 2 per cent. over the statutory limit of 10 per cent.

It will thus be seen what a great influence the sliding scale has lately exercised upon the working of the London gas companies. I may here record that the origin of the sliding scale is due to Mr. George Livesey, M. Inst. C.E., and the talented and well-known engineer of the South Metropolitan Gas Company. Mr. Livesey, as President Elect of the British Association of Gas Managers, in the year 1874, then suggested in his address that "it ought to be possible to frame a scheme that should cause the interests of gas companies and their customers to run side by side; to make the consumers, in a sense, partners in the gas company, whereby both should participate in any improved or more economical working, giving the companies a *slightly increased* dividend for every reduction in price below a certain minimum standard; and to be perfectly fair, the companies would have to submit to a reduction of dividend if their prices exceeded a maximum limit."

This view we find next officially endorsed by the Board of Trade, in a communication to Mr. James Beal, made in November 1874. Mr. T. H. Farrer stated that "it would appear to deserve serious consideration whether, the *terms of the ultimate purchase being first determined*, the companies should not be allowed, on complete amalgamation, to increase their dividend beyond the present limit in some fixed proportion to any reduction they may thus effect in the price of gas."

In May 1875, this view of the Board of Trade, supported by some further important suggestions as to the character of the upward and downward sliding scale, was communicated officially to Mr. W. E. Forster, M.P., the present Chief Secretary for Ireland, who then was Chairman upon the Metropolis Gas Companies Bill, 1875. Mr. Livesey was next called before the Committee, and supported his principles for an upward and downward scale of dividends according to price, with such success that they were not only adopted by the Committee, but elicited some very complimentary remarks from Mr. W. E. Forster as to the manner and disinterestedness with which Mr. Livesey had tendered his very valuable evidence. The London companies declined then to be bound by these principles; but, as is

well known, they accepted them in subsequent Acts, and they now apply to three companies—the Commercial, the Gas Light and Coke, and the South Metropolitan—embracing nearly the total area of the Metropolis.

That they are, as shrewdly anticipated by their promoter, working very satisfactorily there is no room to doubt. Coals are now marvellously cheap, and what reduction in dividends an increase in the price of coal comparable to 1873-74 would effect is matter for conjecture, but with the heavy burden of capital which distinguishes the companies north of the Thames, it would probably be greater than the present pleasant state of things would seem likely to justify. Those who support the principle of purchase can only cordially rally to the principle of the sliding scale, where it is specified that any departure from the Gas Works Clauses Act, 1847, as to 10 per cent. statutory profits, is made on the understanding that it must not affect the future value of the undertaking. This, unfortunately, has not been provided for, as originally suggested; and whenever it is sought to acquire the London gas companies they will probably claim to sell on 14 or 15 per cent. dividends at the very least, a matter which will place considerable difficulties in the way of any negotiations. This contingency was clearly pointed out at the time by the Earl of Camperdown, and led to a close division in the House of Lords, in which his lordship's amendment was only defeated by the narrow majority of three votes.

MUNICIPAL GAS SUPPLY.

Statistics of Gas Undertakings under the Management of Local Authorities.

1. *BIRMINGHAM.
2. MANCHESTER.
3. *GLASGOW.
4. *LEEDS.
5. *NOTTINGHAM.
6. BRADFORD.
7. SALFORD.
8. *LEICESTER.
9. *BELFAST.
10. OLDHAM.
11. *BOLTON.
12. *DUNDEE.
13. *BLACKBURN.
14. HALIFAX.
15. *HUDDERSFIELD.
16. BIRKENHEAD.
17. ROCHDALE.
18. *ABERDEEN.
19. BURY.
20. GREENOCK.
21. BURNLEY.
22. MIDDLESBROUGH.
23. CARLISLE.
24. *WARRINGTON.
25. PAISLEY.
26. *DEWSBURY.
27. *ROTHERHAM.
28. KEIGHLEY.
29. *BATLEY.
30. *STOKE-ON-TRENT.
31. *RAMSGATE.
32. BARROW-IN-FURNESS.
33. *STAFFORD.
34. *DUKINFIELD, DENTON, AND HAUGHTON.
35. DONCASTER.
36. *PERTH.
37. *HEREFORD.
38. WALLASEY.
39. MIDDLETON AND TONGE.
40. *MANSFIELD.
41. *KILMARNOCK.
42. BINGLEY.
43. *ARBROATH.
44. LEEK.
45. *DUMFRIES.
46. *LEIGH.
47. *EAST RETFORD.
48. *COLNE.
49. NEWRY.
50. DEVIZES.
51. *ALLOA.
52. NEWTON-IN-MACKERFIELD.
53. *ULVERSTONE.
54. SPALDING.
55. NEWBURY.
56. HAWORTH.
57. *EVESHAM.
58. *ASHTON-IN-MAKERFIELD.
59. *DROITWICH.
60. *PORTMADOC.

NOTE.—In the case of towns prefixed with an asterisk (*), this is to denote that fuller details of the transfer will be found in Mr. Silverthorne's "Transfer of Gas Works to Local Authorities," published previously by Messrs. Crosby Lockwood & Co., 7, Stationers' Hall Court, London, E.C.

Statistics of Gas Undertakings under the Management of Local Authorities.

Name of Town.	Corporation, Local Board of Health, or Improvement Commissioners.	Chairman of Gas Committee.	Coals used.	Description of Coal.	Quantity of Gas.		Illuminating Power of Gas.	Undertaking acquired compulsorily, on Terms agreed, or by Arbitration.
					Made per Annum.	Sold per Annum.		
			Tons.		Cubic Feet.	Cubic Feet.	Sperm Candles	
Birmingham	Corporation	The Right Hon. Joseph Chamberlain, M.P. (1879)	316,911	Yorkshire, Derbyshire, North Staffordshire, and Welsh	—	2,645,396,200	17·30	Terms agreed, negotiated by the Right Hon. Joseph Chamberlain, M.P., in 187
Manchester	Corporation	Joseph Lamb	230,000	Lancashire, Wigan, Derbyshire, Yorkshire, Nottingham.	2,314,970,000	2,082,271,000	20·81	Manchester Gas Works, originally established by the Corporation in 1817
Glasgow	Corporation	Wm. Collins (*Lord Provost*)	183,020	Scotch Cannel	1,833,678,000	1,533,219,000	27·00	Compulsorily in 1869

BIRMINGHAM.—*After deducting capitalized value of the annuity payable by the Corporation of Walsall, and the value of annuities extinguished since the purchase. The price of gas was reduced *threepence* all round in 1879.

SALE OF GAS.

CUBIC FEET.	PRICE.
18,194,100	4*s.* 3*d.*, 3*s.* 10*d.*, 3*s.* 8*d.*, 3*s.* 6*d.*
592,385,600	3*s.*
451,056,800	2*s.* 10*d.*
612,201,400	2*s.* 8*d.*
819,222,500	2*s.* 6*d.*
2,493,060,400	2*s.* 9*d.* (average).
152,335,800	Public Lighting, &c.
2,645,396,200	

MANCHESTER.—In order to credit the improvement committee with this handsome

Statistics of Gas Undertakings under the Management of Local Authorities.

Amount paid by Local Authority.	Amount of Capital now engaged in the Undertaking.	Net Profit on Working for the Year.			Price of Gas.		Name of Engineer in charge of Works.
		Paid to Redemption Fund.	Paid to Boro' Fund or Relief of Rates.	Paid to Reserve, Contingency Fund, or Balance.	Consumers.	Public Lamps.	
		£ s. d.	£ s. d.	£ s. d.	Per 1,000 ft.	Per 1,000 ft.	
10 and 7½ per cent. Annuities (Birmingham and Staffordshire Co.) £450,000 (Birmingham Co.)	Annuity £ s. d. Cap.* 1,374,123 15 0 Mort.& Bonds 840,382 16 4 Deb. Stk. 48,650 0 0 2,263,156 11 4	26,165 18 4	25,000 0 0	—	2s. 9d. (average) less 5 per ct. discount	2s. 6d. less 5 per ct. discount	Chas. Hunt, *M. Inst. C.E.* Henry Hack
		£51,165 18s. 4d. 31st December, 1879					
—	550,580 9 6	28,726 15 7	52,000 0 0	—	3s.	No charge whatever is made	G. B. Jackson, *Superintendent* John West, *Engineer*
		£77,728 15s. 24th June, 1879					
9 and 6¾ per cent. Annuities (Glasgow Gas Co.) 9 and 6¾ do. (Glasgow City and Suburban) £34,762 10s. 0d.	Annuity Stk. 415,000 0 0 Loans on Mort. 569,144 0 0 984,144 0 0	11,382 17 7	Paid to Depreciation Account. 17,955 7 8	†7,281 10 10	4s. now reduced to 3s. 10d.	—	Wm. Foulis, *M. Inst. C.E.* Alex. Ross, *Treasurer*
		£36,619 16s. 1d. 31st May, 1879					

surplus £2,998 0s. 7d. was taken from the reserve fund. There is a sum of £25,446 9s. 9d. for depreciation of works included in the accounts *in expenditure*. This allowance is upon the scale of 4 per cent. on buildings, 5 per cent. on apparatus, 2½ per cent. on main pipes, and 10 per cent. on meters. The depreciation fund is applied, of course, to keeping down the capital account, and to that extent at least the works are maintained out of profits. This explains how there is only the low figure of interest—£17,182—to pay on loans outstanding—£550,580—upon this, the second largest undertaking in the United Kingdom. A further sum has also been remitted to the ratepayers at Manchester, through the gas committee's new policy of not charging the expenses of street lighting as heretofore. Since 1862 the price of gas has been gradually reduced from 4s. to 3s. for 21-*candle gas*.

GLASGOW.—†This balance, added to the original balance standing at the profit and loss account 31st May, 1878—*i.e.*, £40,377 5s. 9d.—has enabled the committee to write off in depreciation a further sum of £13,110 10s. 4d., leaving the amount actually carried forward 31st May, 1879, at £34,508 6s. 3d.

Statistics of Gas Undertakings under the Management of Local Authorities.

Name of Town.	Corporation, Local Board of Health, or Improvement Commissioners.	Chairman of Gas Committee.	Coals used.	Description of Coal.	Quantity of Gas.		Illuminating Power of Gas.	Undertal acquir compulsori Term agreed, by Arbitr
					Made per Annum.	Sold per Annum.		
			Tons.		Cubic Feet.	Cubic Feet.	Sperm Candles	
Leeds	Corporation	J. R. Bower (*Alderman*)	134,904	Local & South Yorkshire	1,250,000,000	1,063,385,000	18¼	Terms the Le Gas Ligh and the New Light settled Commit in 187
Nottingham	Corporation	J. L. Thackeray	98,051	South Yorkshire, North Derbyshire, and Local Cannel	983,566,000	890,706,300	18·00	Purchase introdu into Parl agreem followe 1874

LEEDS.—The capital of both the late companies supplying Leeds consisted of 6 per Cent. Consolidated Stock, amounting to the sum of £480,189. They received £140 for every £100 of 6 per cent. stock, or 23⅓ years' purchase. The price of gas for the year ending 30th June, 1880, was 2*s.* 2*d.* less 2½ per cent. discount, and for the current year the price has been reduced to 1*s.* 10*d.*, the lowest price, I believe, that gas has ever been sold at in this country.

This spirited policy illustrates very forcibly what can be done by local authorities in the way of selling gas *cheaply*. As it has attracted so much attention, I am happy, through the courtesy of Mr. Woodall, the eminent engineer of the Leeds Corporation Gas Works, to have an opportunity of including here the estimate upon which it is based. A careful perusal of that statement will satisfy most professional men that the estimate will be amply realized.

LEEDS CORPORATION GAS SUPPLY.

ESTIMATED REVENUE ACCOUNT FOR THE YEAR ENDING 30TH JUNE, 1881.

Manufacture, 1,400 millions; Sale, 1,230 millions; Coal producing 9,333 feet per ton.

Coal and Cannel—		By Gas, at 1*s.* 10*d.* per 1,000		
To 150,000 tons, at 7*s.* 8*d.*	£57,500	feet	£112,750	
Wages, at 2*s.* 10*d.* per ton	21,250	Meter Rents	11,200	
Water	600			£123,950
Wagon Hire	550	Less Discounts		3,000
Horse and Cart Hire	400			£120,950
Incidentals	100			
Repairs of Mains, Works, Retorts, Meters, &c.	20,000	Coke	£10,000	
Rates and Taxes	4,800	Tar	19,837	
Printing and Stationery	500	Ammoniacal Liquor	20,416	
Office Expenses and Incidentals	600			50,253
Salaries	4,400	Oxide of Iron		300
Inspectors	4,800	Old Iron		300
Rents Leakages	1,500	Rents of Property		400
Sinking Fund	9,700			
Interest	40,000			
Balance	5,503			
	£172,203			£172,203

Statistics of Gas Undertakings under the Management of Local Authorities.

ımount paid by Local Authority.	Amount of Capital now engaged in the Undertaking.	Net Profit on Working for the Year.			Price of Gas.		Name of Engineer in charge of Works.
		Paid to Redemption Fund.	Paid to Boro' Fund or Relief of Rates.	Paid to Reserve, Contingency Fund, or Balance.	Con-sumers.	Public Lamps.	
3⅓ years' purchase eeds £ s. d. asLight Co. 366,108 15 7 eeds ew Gas ght Co. 330,334 16 0 £696,443 11 7	£ s. d. 967,405 17 8	£ s. d. 9,674 1 2	£ s. d. —	£ s. d. —	Per 1,000 ft 2s. 6d. 2½ per cent. dis-count.	Per 1,000 ft. 2s. 6d. 2½ per cent. dis-count	H. Woodall
		£23,623 10s. 10d. 30th June, 1879					
½ and 6½ per cent. Annuities pon £369,434 5s. £22,442	Annuity Cap. 362,413 2 6 Loans 70,555 0 0 Deb. Stk. 142,147 17 0 575,115 19 6	7,021 2 6	12,500 0 0	3,705 11 11	3s. 2s. 11d. 2s. 10d.	—	John Wilson
		£23,226 14s. 5d. 30th June, 1880					

NOTTINGHAM.—The sum of £7,021 2s. 6d. has been applied to repurchasing and extinguishing 90 annuities out of the original 7,242 annuities of the nominal value of £50, constituting the annuity capital £369,434 5 0
Less 90 annuities repurchased and cancelled 7,021 2 6
£362,413 2 6

The price of gas has also been reduced 2d. all round from September 1880.

The net profit rose from £14,957 10s. 1d. in 1879 to the magnificent surplus of £23,226 14s. 5d. on this occasion.

Statistics of Gas Undertakings under the Management of Local Authorities.

Name of Town.	Corporation, Local Board of Health, or Improvement Commissioners.	Chairman of Gas Committee.	Coals used.	Description of Coal.	Quantity of Gas.		Illuminating Power of Gas.	Undertak acquire compulsoril Terms agreed, by Arbitra
					Made per Annum.	Sold per Annum.		
			Tons.		Cubic Feet.	Cubic Feet.	Sperm Candles	
Bradford	Corporation	John Ingle	86,420¾	Silkstone from Dodworth, near Barnsley, and Cannel from Batley	849,252,000	806,516,860	18½	On ter agreed tc ratified b of Parlia in 18
Salford	Corporation	Wm. Sharp (*Alderman*)	Coal— 35,196 Cannel— 38,489 73,685	—	715,676,000	615,694,738	20·01	—
Leicester	Corporation	Thos. Hy. Downing	54,754	Derbyshire, Nunnery Coal (S. Yorkshire) New North Staffordshire, and Hucknell Cannel	547,045,000	535,003,272	16·50	On ter agree negotiat Aldern Stafford Mr. Gri in 18
Belfast	Corporation	Sir John Savage, J.P.	52,934	Wigan, Arley Mine, with 2 p.c. of Cannel	548,039,000	498,059,000	17 to 17½	On ter agree 22½ ye purchas the stat dividen the pai capital £200,0 10 and in 18

BRADFORD.—An explosion occurred at one of the stations of the corporation on the 22nd November, 1879, by the destruction of the purifiers, and consequently no gas was made there from that time to the 16th January, 1880, rendering the consumption to the close of the year about 50 millions less than it would otherwise have been.

SALFORD.—The new works Mr. Hunter is now carrying out at Salford are estimated to cost £160,000. They will be paid to the extent of £30,000 out of the depreciation fund,

Statistics of Gas Undertakings under the Management of Local Authorities.

ınt paid by Local Authority.	Amount of Capital now engaged in the Undertaking.	Net Profit on Working for the Year.			Price of Gas.		Name of Engineer in charge of Works.
		Paid to Redemption Fund.	Paid to Boro' Fund or Relief of Rates.	Paid to Reserve, Contingency Fund, or Balance.	Consumers.	Public Lamps.	
	£ s. d.	£ s. d.	£ s. d.	£ s. d.	Per 1,000 ft.	Per 1,000 ft.	
210,000	345,612 15 7 62,410 11 5 (expended on new works)	8,315 11 2	26,000 0 0	—	3*s.* discnt. from 2½ to 20 p.c.	2*s.*	D. Swallow
		£34,446 13*s.* 11½*d.* 1879					
				On Depreciation Account.			
—	Loans 269,884 6 1 Salford Pref. An. Cap. at 25 years' purchase 63,250 0 0 333,134 6 1	6,518 11 11	10,000 0 0	13,636 13 8	3*s.* 5*d.* to 4*s.* 5*d.* reduced 2*d.* since	—	Saml. Hunter, *Assoc. Inst. C.E.*
		£30,155 5*s.* 7*d.* 25th March, 1879					
½, 8⅘, and 8 p.c. nnuities upon £220,000, *i.e.* 9,065 14*s.* 3⅗*d.*	G. & W. 4 p.c. Deb. Stock 476,651 12 6 Do. do. 54,558 15 7 Do. do. 4½ p.c. 12,700 0 0 543,910 8 1	2,004 0 0	8,108 1 11	5,000 0 0	2*s.* 9¾*d.* (average) 3*s.* 4*d.* 2*s.* 10*d.* 2*s.* 9*d.* 2*s.* 8*d.* 2*s.* 6*d.*	—	C. S. Robinson
		£18,140 4*s.* 2*d.* 30th June, 1879					
£386,550 e Corporation ng over Co. Re- Fund £14,000 ss. . . 3,000 11,000	522,344 2 4	5,363 10 3	—	—	3*s.* 6*d.* with discnt. 20 p.c. no meter rent	£3 per annum one-third, 5 cubic feet per hr. remndr. 4 feet per hr.	James Stelfox
		£28,770 3*s.* 10*d.* 30th June, 1880					

being in place of old apparatus either worn out or inefficient; the remaining sum of £130,000 will be provided for by further mortgage loans.

BELFAST.—The capital account of the undertaking to 30th June, 1879, stood at £454,302 14*s.* 3*d.* A meter investment—£38,000—brought it up to £492,303 4*s.* 3*d.* During the past year an additional outlay on the present works of £30,040 18*s.* 1*d.* has been incurred, raising the capital expenditure, as shown above, to £522,344 2*s.* 4*d.* The gas committee

Statistics of Gas Undertakings under the Management of Local Authorities.

Name of Town.	Corporation, Local Board of Health, or Improvement Commissioners.	Chairman of Gas Committee.	Coals used.	Description of Coal.	Quantity of Gas.		Illuminating Power of Gas.	Undertaking acquired compulsorily, on Terms agreed, or by Arbitration.
					Made per Annum.	Sold per Annum.		
			Tons.		Cubic Feet.	Cubic Feet.	Sperm Candles	
Oldham	Corporation	G. Wainwright (*Alderman*)	48,549	Wigan and Dukinfield Cannel	484,102,000	456,322,000	18·35	On terms agreed in 1853
Bolton	Corporation	Thos. Moscrop (*Alderman*)	40,850	—	428,394,000	388,469,000	18·00	Purchase Bill introduced, transfer by agreement followed in 1872
Dundee	Gas Commissioners: 5 from Twn. Cncl., 4 from Guildry, 5 from Chamber of Commerce, 2 from Nine Trds., 1 from Three Trds.	Dean of Guild, Senior Bailie, and Convener of Nine Trades	30,126	Scotch Cannel chiefly	340,489,600	286,361,700	26·27	By arbitration 1868

have decided to appropriate the whole of the amount standing at the credit of the renewal and contingency fund—£60,000—and also the surplus profits shown above to the extent of £22,500 7*s.* 5*d.*; to the purpose of writing off capital the sum of £82,500 7*s.* 5*d.*; leaving the capital account at the reduced figure of £439,843 14*s.* 11*d.* The balance of surplus profits is, consequently, £906 6*s.* 2*d.* This policy, I believe, is to be persevered with until the premium on the original capital paid by the Corporations—*i.e.*, £186,550—is effectually written off.

Further allusion to the splendid working results achieved at Belfast by Mr. James Stelfox is made elsewhere, p. 27.

Statistics of Gas Undertakings under the Management of Local Authorities.

›unt paid by Local Authority.	Amount of Capital now engaged in the Undertaking.	Net Profit on Working for the Year.			Price of Gas.		Name of Engineer in charge of Works.
		Paid to Redemption Fund.	Paid to Boro' Fund or Relief of Rates.	Paid to Reserve, Contingency Fund, or Balance.	Consumers.	Public Lamps.	
£110,000	£ s. d. 230,570 0 0 (exclusive of Annuity Capital)	£ s. d. 2,248 0 0	£ s. d. 13,500 0 0	£ s. d. —	Per 1,000 ft. 4s. 2d. with discounts	Per 1,000 ft. £2 2s. per annum	John Chadwick Hrbrt. Andrew
		£16,572 12s. 7d. 25th March, 1880					
o and 6½ p.c. Annuities on £187,687, £14,460 4s. 10d.	335,107 10 1	Sinking and Renewal Fund. 8,747 9 0	8,099 9 7	—	3s. 4d. 3s. 10d.	Do.	A. C. Fraser
		£16,846 18s. 7d. 30th June, 1879					
and 6¾ p.c. An. on £79,687 ›ndee Gas Light Co.) and 4¼ p.c. An. on £55,000 ›dee New Gas Co. ∴ £8,662	An. Capital £ s. d. (24 years' purchase) 199,743 0 0 Loans on Mort. 122,602 0 0 322,345 0 0	2,200 0 0	—	500 0 0	3s. 8d. less 5 p.c. net = 3s. 5¾d.	3s. 5¾d.	John McCrae
		No profit made. 30th April, 1880					

DUNDEE.—No profit is sought to be made, the price of gas being fixed annually according to an estimate prepared for the ensuing year. Mr. John McCrae has recently succeeded as engineer to the post so long honourably filled by his esteemed father, the late Mr. B. M. McCrae. Mr. McCrae will long be remembered as having contributed in a very large measure to the well-being of the town of Dundee by the remarkable ability he brought to bear upon the working of the Dundee Gas Undertaking.

OLDHAM.—The capital account shows that the sum of £110,000 is debited as the cost of the transfer of the old Company's undertaking, on the 31st July, 1853, *i.e.*, the value of the works and mains £69,155 10*s.* 8*d.*, and amount paid for goodwill to the Company on estimating the annuities at 25 years' purchase £40,844 9*s.* 4*d.*

Statistics of Gas Undertakings under the Management of Local Authorities.

Name of Town.	Corporation, Local Board of Health, or Improvement Commissioners.	Chairman of Gas Committee.	Coals used.	Description of Coals.	Quantity of Gas.		Illuminating Power of Gas.	Undertaking acquired compulsorily, on Terms agreed, or by Arbitration.
					Made per Annum.	Sold per Annum.		
			Tons.		Cubic Feet.	Cubic Feet.	Sperm Candles	
Blackburn	Corporation	Robert Duckworth (*Alderman*)	29,886	—	317,547,000	281,846,500	—	Improvement Bill introduced, transfer by agreement followed in 1877
Halifax	Corporation	Jas. T. Riley (*Alderman*)	27,588	Yorkshire Coal	277,649,000	249,482,600	17·96	By Act of Parliament, on terms agreed in 1856
Huddersfield	Corporation	J. Woodhead (*Alderman*)	—	—	—	233,275,000 (private consumers)	—	On terms agreed in 1872
Birkenhead & Claughton	Corporation	H. Rawclifte, J.P.	23,500	Wigan Coal, Wigan and Welsh Cannel	234,073,000	221,082,700	20·00	Under powers of Local Act of Parliament in 1858
Rochdale	Corporation	W. J. Petrie	24,840	Cannel and Coal	249,799,000	220,552,100	18·22	Undertaking purchased in the year 1844
Aberdeen	Corporation	David Macdonald (*Bailie*)	—	Cannel Coal	236,855,000	—	30·00	Semi-compulsorily "in Committee," 1871

ABERDEEN.—*The balance is absorbed by the sum paid as bank interest on the amount due to the corporation's bankers.

Statistics of Gas Undertakings under the Management of Local Authorities.

paid by Local uthority.	Amount of Capital now engaged in the Undertaking.	Net Profit on Working for the Year.			Price of Gas.		Name of Engineer in charge of Works.
		Paid to Redemption Fund.	Paid to Boro' Fund or Relief of Rates.	Paid to Reserve, Contingency Fund, or Balance.	Consumers.	Public Lamps.	
	£ s. d.	£ s. d.	£ s. d.	£ s. d.	Per 1,000 ft.	Per 1,000 ft.	
, and 7 p.c. n £238,035 19,812 9*s*.	Old Shareholders Cap. 238,035 0 0 Loans 96,144 10 0	None	—	2,067 12 1½	4*s*. 3*d*. 4*s*. 3*s*. 9*d*.	—	S. R. Ogden
£64,624 10*s*.	334,179 10 0	£2,067 12*s*. 1½*d*. 31st December, 1879 (including meter rents, miscellaneous receipts, &c.)					
35,000	260,784 19 10	1,618 10 9	8,730 9 8	Renewal Account. 3,000 0 0	3*s*. 4*d*. less 8⅓, 10, & 12½ p.c.	3*s*. 4*d*. less 12½ p.c.	Wm. Carr
		£13,349 0*s*. 5*d*. 31st December, 1879					
' purchase of Dividends at 10 and 5 n £69,000 £140,400	221,647 0 0	721 12 0	7,546 8 4	990 0 0	3*s*.	£2	John Burgess, *Assoc. M. Inst. C.E.*
		£9,258 0*s*. 4*d*. 31st August, 1879					
220,000 and Water Works)	340,152 0 0 (Gas and Water Works)	3,557 17 5	—	To Profit and Loss Account. 5,665 1 6	3*s*. 6*d*. 4*s*. reduced 1*s*. 6*d*. since 1863	3*s*. 3*d*.	T. O. Paterson
		£9,222 18*s*. 11*d*. 25th March, 1879					
27,700	164,956 9 3	2,393 3 8	8,886 0 8½	—	3*s*. 11*d*. within 4*s*. 7*d*. without	£2 10*s*. per annum	W. Romans
		£11,279 4*s*. 4½*d*. 25th March, 1880					
ent. Annui- share capi- £65,000, 5,500	Annuity Capital £114,933 Loans . . 20,200 £135,133	To Reserve, Contingency, and Sinking Fund Account. 1,400 0 0	No surplus profits are made.	To Depreciation Account. 1,187 10 8½	4*s*. 2*d*.	4*s*. 2*d*. less 6 per ct. discount	Alex. Smith
		£2,838 12*s*. 10*d*.* 30th Sept., 1879					

Statistics of Gas Undertakings under the Management of Local Authorities.

Name of Town.	Corporation, Local Board of Health, or Improvement Commissioners.	Chairman of Gas Committee.	Coals used.	Description of Coal.	Quantity of Gas.		Illuminating Power of Gas.	Undertak acquire compulsorily Terms agreed, by Arbitrat
					Made per Annum.	Sold per Annum.		
			Tons.		Cubic Feet.	Cubic Feet.	Sperm Candles	
Bury (Lanc.)	Corporation	J. Heap (*Alderman*)	16,777	Wigan Coal and Yorkshire Cannel	174,832,000	167,072,000	19·00	On tern agreed 1858
Greenock	Board of Police	Dugald Shankland (*Bailie*)	16,600	All Cannel	159,000,000	141,000,000	29·00	Has alw been in hands of Corporat
Burnley	Corporation	W. M. Coultate, J.P. (*Alderman*)	15,044	Wigan Gas Coal	149,325,000	137,805,300	18·23	On tern agreed 1854
Middlesbro'-on-Tees	Corporation	J. Stevenson, J.P.	15,532	North Brancepeth, Framwellgate, and Binchester	155,913,000	137,065,000	17·74	By agreer in 185
Carlisle	Corporation	R. Forster (*Alderman*)	13,850	Local and Scotch Cannel	136,036,000	125,179,000	18·75	On tern agreed 1850

BURY (LANC.)—* The other moiety is available *for division amongst consumers*—£3,529 6*s.* 7*d.*—which, added to the undivided profits of last year, gives £4,205 12*s.* 4*d.*, or a discount of fivepence per 1,000 feet for the consumers for the year 1880-81. The net cost of the works to the corporation was a sum of £52,249 17*s.* 10*d.*, consisting of 925 annuities at £50 each, and of the value of £2 each, to be redeemed in 20 years, and £8,200 of loans on mortgage, less £2,200 2*s.* 2*d.* balance of assets and liabilities transferred from the company to the corporation, leaving, as stated above, a net cost of £52,249 17*s.* 10*d.* This is now effected, and the annuities—£46,250—are extinguished.

GREENOCK.—The Police Board are the Burgh Commissioners, who have charge of

Statistics of Gas Undertakings under the Management of Local Authorities.

Amount paid by Local Authority.	Amount of Capital now engaged in the Undertaking.	Net Profit on Working for the Year.			Price of Gas.		Name of Engineer in charge of Works.
		Paid to Redemption Fund.	Paid to Boro' Fund or Relief of Rates.	Paid to Reserve, Contingency Fund, or Balance.	Consumers.	Public Lamps.	
£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	Per 1,000ft.	Per 1,000 ft.	
52,249 17 10	91,128 12 4	1,822 11 5	3,529 6 7 (moiety)*	—	3*s.* 4*d.* discount for paymt. 5 p. c.	—	Saml. Parsons
		£8881 4*s.* 7*d.* 31st March, 1880					
—	131,124 16 10	2,233 7 2	4,000 0 0	—	4*s.* 2*d.* meters free	4*s.* 2*d.*	Saml. Stewart
		£6,233 7*s.* 2*d.* 2nd August, 1880					
31,299 11 11	54,621 8 3	1,016 17 8	2,944 0 8	—	2*s.* 9*d.* discount 3*d.* per 1000ft.	50*s.* each	S. P. Leather
		£5,715 10*s.* 8*d.* Nine months, 31st March, 1880					
18,200 0 0	80,139 0 0	4,190 0 0	2,415 0 0	—	2*s.* 9*d.* net	4*s.* net including lamps and lighting	E. D. Latham, *Assoc. M. Inst. C.E.*
		£6,605. 20th June, 1879					
15,480 0 0	56,465 7 9 Less depreciation at 3 per cent.	—	2,000 0 0	—	2*s.* 9*d.*	£2 per lamp	J. Hepworth, *Assoc. M. Inst. C.E.*
		£5,674. 30th June, 1879					

all works relating to lighting, water, sanitary, and such other matters, and are a body independent of the town council, which only *ex officio* form part of it.

BURNLEY.—The sum of £1,754 12*s.* 4*d.* has also been carried to capital account for depreciation fund. The works have been largely built out of surplus profits. The total expenditure on capital expenditure, including purchase-money, is now £119,179 7*s.* 11*d.*

CARLISLE.—The capital value of the works is between £70,000 and £80,000, and the only burden on them is a mortgage of £10,000.

Statistics of Gas Undertakings under the Management of Local Authorities.

Name of Town.	Corporation, Local Board of Health, or Improvement Commissioners.	Chairman of Gas Committee.	Coals used.	Description of Coals.	Quantity of Gas.		Illuminating Power of Gas.	Undertaking acquired compulsorily, on Terms agreed, or by Arbitration.
					Made per Annum.	Sold per Annum.		
			Tons.		Cubic Feet.	Cubic Feet.	Sperm Candles.	
Warrington	Corporation	C. J. Holmes (*Alderman*)	14,223	Wigan, 4 feet, Arley, and Cannel	140,882,000	122,989,700	18 to 19	On terms agreed in 1877
Paisley	Corporation	William MacKean	13,600	Cannel	131,568,000	109,544,000	28·7	On terms agreed in 1845
Dewsbury	Corporation	J. Howgate	11,908	Dewsbury Moor Blackbed, & Flockton Seam, with 8 per cent. of Local Cannel	119,878,900	103,991,600	17·67	Purchase Bill promoted jointly by Dewsbury and Batley Corporations. Agreement made "in Committee," 1873, and Arbitration in 1877
Rotherham	Corporation	J. M. Habershon (*Alderman*)	11,987	Silkstone and Barnsley Seams	108,540,000	90,280,900	16·00	Compulsorily, by Act of Parliament in 1870

WARRINGTON.—Mr. James Paterson's "Notes on the Lithology of Gas Coals" are no doubt well known to most of my readers. They afford information, usually difficult to procure, on a subject of considerable importance to engineers. They are presented in a very useful form, and are chiefly from analyses made by Mr. Paterson himself during the course of an extended professional practice.

PAISLEY.—* This is substantially correct. The original sum of £40,000, added to that since *expended* in extensions—*i.e.*, to the 28th May, 1879—£36,152 13*s.* 6*d.*—furnishes a total of £76,152 13*s.* 6*d.* Of the £40,000, however, the only unredeemed amount then was £24,006 5*s.*, which, added to the loans on mortgage for extension of works (£15,300),

Statistics of Gas Undertakings under the Management of Local Authorities.

ıt paid by Local Authority.	Amount of Capital now engaged in the Undertaking.	Net Profit on Working for the Year.			Price of Gas.		Name of Engineer in charge of Works.
		Paid to Redemption Fund.	Paid to Boro' Fund or Relief of Rates.	Paid to Reserve, Contingency Fund, or Balance.	Consumers.	Public Lamps.	
	£ s. d.	£ s. d.	£ s. d.	£ s. d.			
d 8¾ per cent. ities on a capi- of £64,800, · £6,120. ; paid, £2,700	152,000 0 0	—	—	—	Per 1,000ft. 3s. 3d. 3s. 6d.	Per 1,000 ft. 1s. 10d. average	Jas. Paterson, *C.E., F.G.S.*
		£4,171. 1879-80					
·. per cent. on £40,000	39,306 5 0*	500 0 0	2,871 12 3	—	4s. 2d., since reduced to 3s. 9d.	4s. 2d.	Geo. R. Hislop
		£3,371 12s. 3d. 28th May, 1879					
rs' purchase of num dividends ; × £10,675 = £266,875. ıortion due to Dewsbury 7,807 6s. 3d.	216,006 5 4	4,000 0 0	2,915 8 9	—	4s. discount 2½ to 5 per cent., since reduced to 3s. 6d.	4s.	Chas. Armitage
		£6,915 8s. 9d. 30th June, 1879					
ırs' purchase of any's dividends £2,250 £53,455 net	89,353 11 4	None	2,750 0 0	564 5 1	3s. to consumers of 44,500 cub. ft. per ann.; under 44,500, 3s. 3d.	57s. 6d. per lamp, burning 3,250 hours	James Goodwin Thos. Bellamy, *Secretary* Geo. Livesey *M. Inst. C.E. London, Consulting Engineer*
		£3,314 5s. 1d. 25th March, 1880					

makes the total capital invested in the works £39,306 5s. It should be explained, however, that the corporation account with the Royal Bank of Scotland was overdrawn on 28th May, 1879, by £9,293 18s. 2d.

DEWSBURY.—Since 1878 and 1879, £5,950 has been carried to contingency fund, and lent to the water works board on mortgage at 4 per cent. £3,000 has also been handed over out of the gas profits in aid of the water rate during the same period.

ROTHERHAM.—The sinking fund having been previously made up to the statutory amount of £5,185 15s. 9d. for 1880, nothing was required for the year 1879-80.

Statistics of Gas Undertakings under the Management of Local Authorities.

Name of Town.	Corporation, Local Board of Health, or Improvement Commissioners.	Chairman of Gas Committee.	Coals used.	Description of Coal.	Quantity of Gas.		Illuminating Power of Gas.	Undertaking acquired compulsorily, on Terms agreed, or by Arbitration.
					Made per Annum.	Sold per Annum.		
			Tons.		Cubic Feet.	Cubic Feet.	Sperm Candles	
Keighley	Local Board of Health	R. L. Hattersley	9,427	98 per cent. Local (Common) Coal, 2 per cent. Cannel	98,526,000	88,480,000	16·00	Gas Works were erected by the Keighley Improvement Commissioners in 1824
Batley	Corporation	Henry Brooke (*Alderman*)	9,087	Haigh Moor Coal	84,021,800	78,340,400	—	*See* Dewsbury (p. 44)
Stoke-on-Trent and Fenton	Joint Committee of Corporation and Local Board	Wm. Keary (*Alderman*)	9,375	Local Coal and Slack	88,918,400	76,578,286	15·00	On terms agreed in 1878
Ramsgate	Improvement Commissioners	Rev. E. G. Banks	7,904	Pelaw Main	79,048,000	74,534,600	14·65	On terms agreed in 1877, after two protracted Parliamentary contests

KEIGHLEY.—New works recently erected, with a manufacturing capacity of nearly double the present production.

BATLEY.—The public lamps are practically lighted *free of charge*, the value of which is £1,216 16*s.*, remitted in local taxation.

STOKE-ON-TRENT.—This transfer has been attended with a degree of success which is altogether remarkable, but which must, in some measure, be attributed to the

Statistics of Gas Undertakings under the Management of Local Authorities.

unt paid by Local Authority.	Amount of Capital now engaged in the Undertaking.	Net Profit on Working for the Year.			Price of Gas.		Name of Engineer in charge of Works.
		Paid to Redemption Fund.	Paid to Boro' Fund or Relief of Rates.	Paid to Reserve, Contingency Fund, or Balance.	Consumers.	Public Lamps.	
	£ s. d.	£ s. d.	£ s. d.	£ s. d.	Per 1,000 ft.	Per 1,000 ft.	
—	90,000 0 0	1,270 0 0	4,000 0 0	—	2s. 10d. to 3s. 2d.	Cost price	John Laycock
		£5,270. 1879					
portion due to Batley 39,067 13s. 9d.	159,284 3 8	None	1,216 16 0	—	3s. 9d. to 4s. less 6d. per 1000 ft. discount	The sum is 1s. per lamp per annum	Chas. Eastwood
		£1,216 16s. 0d. 30th June, 1879					
d-up Capital of mpany £34,000 ing 10 per cent. years' purchase ∴ £85,000.	85,000 0 0	—	Stoke-on-Trent 2,553 11 0 Fenton 1,163 15 0		3s. 6d.	57s. 6d. per lamp	John McMillan
		£3,717 6s. 0d. 1879					
£65,000	80,000 0 0	Redemption and Interest 3,447 0 7	Since Works transferred 4,065 8 10	—	3s. 2d.	3s. 2d. less 10 per cent.	W. A. Valon, *Assoc. Inst. C.E.*
		£4,558 1s. 4d. (gross). 25th March, 1880					

company's capital at the date of transfer being very low in relation to the quantity of gas made—83 · millions. The working is doubtless exceptionally good, but there are no printed accounts available, and I am much indebted for these particulars to Mr. G. Turner, late Mayor of Stoke-on-Trent.

The gross profit for the year 1879 is stated to have been . . .	£7,686 14 11
Less interest paid on capital	3,969 8 11
Leaving surplus, as above	£3,717 6 0

For a recent transfer this has afforded a splendid result, as gas is sold very cheaply.

Statistics of Gas Undertakings under the Management of Local Authorities.

Name of Town.	Corporation, Local Board of Health, or Improvement Commissioners.	Chairman of Gas Committee.	Coals used.	Description of Coal.	Quantity of Gas.		Illuminating Power of Gas.	Undertaking acquired compulsorily, on Terms agreed, or by Arbitration.
					Made per Annum.	Sold per Annum.		
			Tons.		Cubic Feet.	Cubic Feet.	Sperm Candles	
Barrow-in-Furness	Corporation	Josiah Timmis Smith (*Alderman*)	7,255	South Yorkshire and Wigan	75,512,000	68,450,000	20·00	Gas and Water Works purchased by agreement for £82,500 in 1868
Stafford	Corporation	J. T. Cox (*Alderman*)	8,000	Wigan and Madeley	66,762,000	61,385,000	16·00	Compulsorily (no opposition) and by arbitration in 1878
Dukinfield, Denton, and Haughton	Joint Gas Committee of Local Boards	No fixed Chairman	8,432	Cannel and Coal	81,038,000	60,994,634	18½ to 19	On terms agreed in 1877
Doncaster	Corporation	W. C. Clark (*Alderman*)	6,000	Old Silkstone	61,000,000	54,000,000	18·00	Agreement with Shareholders in 1858
Perth	Corporation	The Lord Provost	5,700	Cannel	57,333,700	52,194,630	26 to 28	Purchase Bill promoted, agreement followed in 1871

DUKINFIELD.—Important results have already been attained since the management has passed into the hands of the joint committee, the price of gas being 8*d.* lower than in 1878. The joint committee have also been fortunate enough to secure the services of Mr. Harrison Veevers as their engineer and secretary. Under his management none but the very best results possible may be safely anticipated. Mr. Veevers is one of our ablest engineers, and the results of his management of the Bolton Gas Works will never be surpassed.

DONCASTER.—Previous to 1858 the corporation were owners of about one-third or more of the gas company's shares; the other shareholders sold, by agreement, the balance of their holdings. The company owed £1,450; this, together with three-eighths of the

Statistics of Gas Undertakings under the Management of Local Authorities.

nount paid by Local Authority.	Amount of Capital now engaged in the Undertaking.	Net Profit on Working for the Year.			Price of Gas.		Name of Engineer in charge of Works.
		Paid to Redemption Fund.	Paid to Boro' Fund or Relief of Rates.	Paid to Reserve, Contingency Fund, or Balance.	Consumers.	Public Lamps.	
		£ s. d.	£ s. d.	£ s. d.	Per 1,000ft.	Per 1,000 ft.	
›st of Gas Section £35,000	£78,190 14*s.*	1,060 2 6	4,690 11 11	—	5*s.* reduced since to 4*s.*	£3 each per annum including maintenance of clms., &c.	W. Fergusson
		£5,750 14*s.* 5*d.* 30th June, 1879					
				To Depreciation Account.			
£72,500	£76,168 9*s.* 8*d.*	None	1,500 0 0	728 3 0	2*s.* 10*d.* less 5 p.c.	£3 4*s.*	Jno. Storer
		£2,784 16*s.* 4*d.* 25th March, 1880					
› p.c. An. on the Capital £30,000 f the Dukinfield Gas Co. ∴ £3,000	£40,000	Not yet in force	D'field £500 Denton 250 Haughtn. 250 £1,000	—	3*s.* 8*d.* net 3*s.* 7*d.* to 3*s.* 3*d.*	—	H. Veevers, *Assoc. M. Inst. C.E.*
		£1,536 14*s.* 10*d.* 30th June, 1880					
15 for every £10 Share	£42,012 15*s.* 10*d.*	Bonds and Extensions. 732 8 9	2,076 10 4 1,000 (Bns.)	—	3*s.* 4*d.*	50*s.* per annum	Robert Bridge
		£4,250 18*s.* 5*d.* 31st August, 1879					
p.c. Annuities on £45,000 ∴ £2,812 10*s.*	£53,000	500 0 0	No profits are made	—	4*s.* 2*d.*	4*s.* 2*d.*	T. Whimster
		£1,033 10*s.* 5*d.* 1879-80					

purchase-money due to the shareholders, was met by an issue of £6,000 in Corporation Bonds at 4½. The balance of the purchase-money was also paid in bonds, the amount of these now unredeemed is £4,945, bearing interest £229 5*s.* 6*d.* No further capital has since been raised, all extensions having been paid out of revenue, and the bonds partly cleared off from the same source. The corporation annually charge the capital with 5 per cent. interest, which is placed to the credit of the borough fund (£2,076 10*s.* 4*d.*)

PERTH.—Of the surplus, £1,033 10*s.* 5*d.*, the sum of £500 is laid aside to sinking fund, to repay borrowed money; £200 to depreciation of works fund; £230 to meet expenses of new exhauster; and the balance to meet bad debts.

Statistics of Gas Undertakings under the Management of Local Authorities.

Name of Town.	Corporation, Local Board of Health, or Improvement Commissioners.	Chairman of Gas Committee.	Coals used.	Description of Coal.	Quantity of Gas.		Illuminating Power of Gas.	Undertaking acquired compulsorily, on Terms agreed, or by Arbitration.
					Made per Annum.	Sold per Annum.		
			Tons.		Cubic Feet.	Cubic Feet.	Sperm Candles	
Hereford	Corporation	Philip Ralph	5,236	South Wales Golynos	57,309,000	49,441,000	14½	Under Hereford Improvement Act, 1854, arbitration in 1872
Wallasey	Local Board	E. Davies	5,108½	Cannel and Coal	55,178,010	(Loss about 8 p.c.)	Av. 30	Erected in 1859
Middleton and Tonge	Improvement Commissioners	John Hilton	4,682	Lancashire Coal and Wigan Cannel	47,246,000	39,606,000	18·00	On terms agreed in 1861
Mansfield	Improvement Commissioners	Thos. Savage	4,477	Derbyshire and Yorkshire	42,437,000	—	18·1	On terms agreed in 1878
Kilmarnock	Corporation	Jas. Brown	4,346	Cannel	42,312,656	37,080,150	28·7	By agreement in 1872
Bingley	Improvement Commissioners	Abraham Smith	3,545	—	35,598,200	34,598,000	16·75	By arbitration in 1867

HEREFORD.—* This amount is exclusive of the "new works" capital. The corporation, anticipating a larger increase in the sale of gas than appears to have been realized during the last two years, decided in 1878 to abandon their old works and build new ones on a fresh site. The outlay on this account has already reached more than £24,269, and it may be anticipated that the interest and redemption of capital incidental to the ultimate outlay will go considerably towards cancelling the handsome balances of nearly £1,800 per annum which Mr. Davis's careful management of the old works has latterly secured to the corporation.

KILMARNOCK.—In order to do full justice to Mr. Dalziel's results, it should be explained that the committee, instead of carrying the cost of the extensions effected last year to capital account as formerly, have paid the whole of these out of revenue. These extensions consist of purifiers, valves, roof of lime store, and main pipes, amounting to £675 12*s.* 3*d.*

Statistics of Gas Undertakings under the Management of Local Authorities.

nt paid by Local Authority.	Amount of Capital now engaged in the Undertaking.	Net Profit on Working for the Year.			Price of Gas.		Name of Engineer in charge of Works.
		Paid to Redemption Fund.	Paid to Boro' Fund or Relief of Rates.	Paid to Reserve, Contingency Fund, or Balance.	Consumers.	Public Lamps.	
£ s. d. ,665 0 0	£ s. d. 56,500 0 0*	£ s. d. 1,224 0 8	£ s. d. —	£ s. d. —	Per 1,000ft. 3s. 9d.	Per 1,000 ft. 3s. 6d.	Wm. Davis
		£3,038 12s. 31st December, 1879					
; original cost £15,000	£47,200	212 5 2	1,783 14 7½	—	3s. 9d.	£4 per annum	E. H. Harris, *Assoc. M. Inst. C.E.*
		£1,995 19s. 9½d. 25th March, 1879					
cent. on Com- 's subscribed al of £26,000	£56,721 1s. 8d.	—	—	—	4s. 2d. less 2½ per ct.	Do.	C. L. Hartley
		£275 5s. 3½d. 31st March, 1880					
;00, subject to ıge for £3,750	£6,000 *in addition* raised by Debenture Stock.	350 0 0	—	1,596 1 7	3s. 9d. 3s. 6d. 3s. 3d. 3s. 2d.	£2 per an. including all chrgs.	Jos. Heydon
		£1,946 1s. 7d. 25th March, 1880					
ɔo upon Com- paid-up Capi- 24,000 (taking ɔan £4,500)	£42,450	636 15 0	—	—	4s. 7d.	—	Saml. Dalziel
		£794 11s. 9½d. 14th June, 1880					
£19,721	£36,760 (1879)	915 0 0	—	—	3s. 6½d. net, 4s. 2d. without	—	G. D. Malam
		£2,043 1s. 9½d. 30th June, 1880					

If this had been carried to gas works account as formerly, the profits of the past year would have been £1,470 4s. 0½d.

BINGLEY.—The Bingley Extension and Improvement Act, 1867, enabled the commissioners to purchase the works of the Bingley Gas Company for the sum of £19,721, the commissioners being responsible for all the debts and liabilities of the company, including the sum of £3,000 which had been borrowed in excess of the amount authorized. The working is remarkable, owing to the very low rate of leakage that prevails, and altogether it must be considered to afford one of our best examples of the management of undertakings of a similar extent. This result must be entirely associated with Mr. Malam, for originally the commissioners did indifferently and incurred liabilities that they are now enabled to liquidate by annual instalments out of surplus profits.

Statistics of Gas Undertakings under the Management of Local Authorities.

Name of Town.	Corporation, Local Board of Health, or Improvement Commissioners.	Chairman of Gas Committee.	Coals used.	Description of Coal.	Quantity of Gas.		Illuminating Power of Gas.	Undertaking acquired compulsorily, on Terms agreed, or by Arbitration.
					Made per Annum.	Sold per Annum.		
			Tons.		Cubic Feet.	Cubic Feet.	Sperm Candles	
Arbroath	Corporation	Alex. Reid (*Provost*)	3,559	1st and 2nd class Cannel	37,697,000	33,262,400	26·5	On terms agreed in 1871
Leek	Improvement Commissioners	John Ward	3,268	South Yorkshire Silkstone	31,376,000	28,147,400	16 to 17	On terms agreed in 1845
Dumfries	Gas Commissioners	Thos. Shortridge (*Provost*)	3,410	¼ 3rd class Cannel and ¾ No. 1 Muirkirk	35,000,000	27,950,710	26 to 28	Under the provisions of the Burghs Gas Supply Act (Scotland) and arbitration in 1878
Leigh (Lanc.)	Local Board	Richd. Greenough	2,789	Arley Mine Coal and Cannel	29,283,000	26,960,000	16·1	On terms agreed in 1874
East Retford	Corporation	B. Huntsman	3,194	South Yorkshire and Silkstone	29,215,000	24,482,000	17·00	On terms agreed in 1878

ARBROATH.—The price of gas during the past year (1879-80) was 5*s.* 2½*d.*; the discount, being the moiety of surplus profits to which the consumers are entitled, reduced it virtually to 5*s.* The council have since reduced it 2½*d.*, nominally to 5*s.* Some criticism has been applied to the price of gas maintained at Arbroath, although in 1870 it was 5*s.* 10*d.* The gas made per ton of coal is 10,591 feet, that sold 9,345; the leakage is therefore 11·76 per cent. Splitting the *net* price into factors, the cost of coal is 22·4*d.* per 1,000 feet sold; the residuals fetch 3·3*d.*, bringing out the net cost at 19·1*d.* The working expenses—23·0*d.*—show the cost of coal and manufacture to be 42·1*d.*, *i.e.*, 3*s.* 6·1*d.* The interest and annuities add 13·4*d.* more, the sinking fund 1·5*d.*, a new condenser 1·5*d.* The actual surplus profits —£415 8*s.* 1*d.*—are equal to 3·0*d.*, making up the necessary selling price, 61·5*d.*, *i.e.*, 5*s.* 1½*d.* A set-off, the meter rents, &c., reduces it to 5*s.*

DUMFRIES.—The results are very satisfactory, and Mr. Wood, to whose persistent efforts the transfer is altogether due, has reason to feel much gratified with this success. When in the first year Mr. Wood was appointed convener he strongly urged the immediate necessity for improving the plant at a comparatively small outlay; his committee did not take

Statistics of Gas Undertakings under the Management of Local Authorities.

ount paid by Local Authority.	Amount of Capital now engaged in the Undertaking.	Net Profit on Working for the Year.			Price of Gas.		Name of Engineer in charge of Works.
		Paid to Redemption Fund.	Paid to Boro' Fund or Relief of Rates.	Paid to Reserve, Contingency Fund, or Balance.	Consumers.	Public Lamps.	
		£ s. d.	£ s. d.	£ s. d.	Per 1,000ft.	Per 1,000 ft.	
r cent. Annuities ompany's paid-up pital of £20,000 Mortgage Debt £4,450	£31,550	200 0 0	380 14 4	—	5s. 2½d.	5s. 2½d.	David Terrace
		£815 8s. 1d. 31st May, 1880					
		Redemption and Extensions.					
,194 upon Comany's Capital of 000 at 6 per cent.	£6,500 (Bonded Dbt)	845 4 6	790 0 0	—	3s. 6d. 3s. 3d. 3s.	No charge made	T. Dickinson
		£2,404 5s. 2d. 25th March, 1879					
;,000 upon a paid- Capital of £12,000 10 per cent. with Loan £2,800	£25,000 at 4½ p.c.	625 0 0	—	300 0 0	5s. 10d. now reduced to 5s.	Do.	A. Malam
		£2,424 4s. 5d. 15th May, 1880					
years' purchase on a Capital of 4,000 at 10 p.c. ∴ £48,000	£62,650	—	—	1,699 11 4	4s. 3d. 4s. 3s. 9d. and 3s. 6d.	3s. 6d.	Jos. Timmins G. Dickinson, *Secretary.*
		£1,699 11s. 4d. 9 ms., 31st March, 1879					
years' purchase n 2,400 fully paid-up £5 Shares 2,000 at 10 per . and a banker s oan of £3,000 £27,744 11s. 7d.	£30,000	Not in force until 3 years from date of purchase.	—	—	3s. 10d. average price	$\frac{5}{16}$ of a penny per lamp per hour	F. Bailey
		£804 15s. 1d. 30th June, 1879					

any steps then, and acting, as new gas committees not unfrequently do, without professional advice, the immediate result of the first year's working was a loss of £1,006 7s. 7d. Acting, however, with great energy since in the direction their late convener would have led them from the first, the committee have since converted that loss into the handsome balance here shown, and have thereby confirmed the very favourable opinion I expressed of this transfer in 1878.

LEIGH.—At a meeting of the gas committee, July 22nd, 1879, the price of gas was reduced from 4s. 9d. to 4s. 6d., subject to discounts making the net price 4s., 3s. 9d., 3s. 6d., and 3s. 3d. per 1,000 feet.

EAST RETFORD.—The terms of purchase in the Act are £24,000 cash, the town council paying in addition all the liabilities of the late company, including the debt to their bankers. The exact cost to the corporation has been £27,744 11s. 7d.

The results proving so satisfactory, the committee recommended a reduction of *fivepence* in the price of gas from the 1st January, 1880, having only had the management of the undertaking one year.

Statistics of Gas Undertakings under the Management of Local Authorities.

Name of Town.	Corporation, Local Board of Health, or Improvement Commissioners.	Chairman of Gas Committee.	Coals used.	Description of Coal.	Quantity of Gas.		Illuminating Power of Gas.	Undertaking acquired compulsorily, on Terms agreed, or by Arbitration.
					Made per Annum.	Sold per Annum.		
			Tons.		Cubic Feet.	Cubic Feet.	Sperm Candles	
Colne (Lanc.)	Local Board of Health	T. T. England	3,000	Arley Mine Coal	28,000,000	—	15½ to 16	On terms agreed in 1877
Newry	Town Commissioners	Jas. F. Erskine, J.P.	2,702	Carlisle and Lesmahago	25,401,400	21,466,000	17·28	By Act of Parliament in 1878
Devizes	Urban Sanitary Authority	W. Brown, J.P.	2,260	Writhlington Pit, Radstock, Somerset	22,000,000	19,961,000	14·00 (average)	Works built by Improvement Commissioners in 1827
Alloa, N.B.	Improvement Commissioners	Robt. Willison	—	Cannel	20,643,500	18,105,340	28·00	Under the provisions of the Burgh Gas Supply Act (Scotland), 1876, and arbitration in 1877
Newton-in-Mackerfield	Improvement Commissioners	W. E. Winstanley	1,827	Two-thirds Edge Green Coals, one-third Wigan Cannel	18,834,300	17,137,700	20·00	Established under local Act, 1855

COLNE.—The price of gas during the company's last year (1876) was 3*s.* 6*d.*, 3*s.* 9*d.*, and 4*s.* 2*d.*

NEWRY.—The gas committee of the Newry Town Commissioners having advised, in November 1877, that Parliamentary powers be sought for the purchase of the works of the Newry Gas Consumers Company or to erect independent works, a Bill was subsequently promoted in 1878 to effect a compulsory purchase of the undertaking. From six months of the passing of the Act the Town Commissioners of Newry were to give notice to the company, who thereupon would be required to sell either by agreement or arbitration Following this

Statistics of Gas Undertakings under the Management of Local Authorities.

ınt paid by Local Authority.	Amount of Capital now engaged in the Undertaking.	Net Profit on Working for the Year.			Price of Gas.		Name of Engineer in charge of Works.
		Paid to Redemption Fund.	Paid to Boro' Fund or Relief of Rates.	Paid to Reserve, Contingency Fund, or Balance.	Consumers.	Public Lamps.	
		£ s. d.	£ s. d.	£ s. d. Paid to Depreciation Fund.	Per 1,000 ft.	Per 1,000 ft.	
000 upon Com-y's Capital of ,500 at 10 p.c.	£34,000	—	—	970 4 2½	3s. 1d. 3s. 4d. 3s. 9d.	2s. 4d. per 100 hours each lamp burns, light extng. and clean.	T. Varley
		£970 4s. 2½d. 31st December, 1879					
£28,500	£32,000 at 4¾ p.c. repayable in 80 half-yearly instalments	284 5 5	Nil	—	5s.	£2 6s. per lamp or 4s. 7d. per 1,000 cub. ft.	J. Marsland
		£1,368 5s. 30th June, 1880					
—	£11,896 17s.	267 4 10	420 4 7	—	3s. 4d.	62s. 6d. per lamp per an.	J. W. Holloway
		£944 12s. 6d. 25th March, 1880					
£23,250	£24,975	632 16 5	—	—	4s. 7d.	4s. 7d.	George Boyd
		£585 0s. 5½d. 15th May, 1880					
—	—	416 1 5	300 0 0	—	2s. 9d. to 3s. net	2s. 9d.	J. Swann R. Brierley, *C.E.*
		£716 1s. 5d. 1879					

step, the commissioners seem to have practically secured the works on their own terms. During the proceedings in Parliament on the Newry Gas Bill, 1878, it transpired that the application had not received the sanction or approval of the Local Government Board of Ireland. Mr. Raikes reported, however, from the committee that the object, being to transfer to the Town Commissioners of Newry the undertaking of the Newry Gas Company, could not be obtained by a provisional order, but by an Act of Parliament. They also considered it of public advantage that the Bill should pass.

Since taking over the works the price has been reduced from 5s. 5d. to 5s. per 1,000 cubic feet.

Statistics of Gas Undertakings under the Management of Local Authorities.

Name of Town.	Corporation, Local Board of Health, or Improvement Commissioners.	Chairman of Gas Committee.	Coals used.	Description of Coals.	Quantity of Gas.		Illuminating Power of Gas.	Undertaking acquired compulsorily, on Terms agreed, or by Arbitration.
					Made per Annum.	Sold per Annum.		
			Tons.		Cubic Feet.	Cubic Feet.	Sperm Candles	
Ulverstone	Local Board	James Park	1,574	Wigan Coal	16,106,200	15,060,686	17·43	On terms agreed, confirmed by Ulverstone Improvement Act, 1874
Spalding	Improvement Commissioners.	Appointed at each meeting	1,700	TownleyMain (Newcastle) and Strafford Silkstone Nuts	16,200,000	13,500,000	15 to 16	By agreement under powers of local Act, in 1862
Newbury	Corporation	J. P. Jackson	1,769	—	16,420,500	13,025,900	—	—
Haworth	Local Board of Health	Geo. Merrall	1,200	Silkstone and Monk Bretton	11,143,400	9,642,000	16·00	On terms agreed in 1872
Evesham	Corporation	G. H. Garrard	—	—	—	6,855,500 (estimated)	—	Under statutory powers in the Evesham Improvement Act. Terms agreed in 1878

NEWBURY.—The works were the property of the Corporation, being merely let on a lease of 14 years, which expired in 1878, the Corporation taking possession of the plant at a valuation. The company's share capital appears to have been £8,000, upon which they paid 10 per cent. and 2½ per cent. bonuses. They returned, also, £26 10*s.* per share to all their shareholders at the conclusion of the lease, following upon the award of Mr. Geo. Livesey, M. Inst. C.E., South Metropolitan Gas Works, London.

The writer (Mr. A. Silverthorne), called in by a section of the town council to advise as to the relative advantages presented by a re-construction or renewal scheme, reported in favour of enlarging the works at a moderate outlay, which would have permitted an imme-

Statistics of Gas Undertakings under the Management of Local Authorities.

Amount paid by Local Authority.	Amount of Capital now engaged in the Undertaking.	Net Profit on Working for the Year.			Price of Gas.		Name of Engineer in charge of Works.
		Paid to Redemption Fund.	Paid to Boro' Fund or Relief of Rates.	Paid to Reserve, Contingency Fund, or Balance	Consumers.	Public Lamps.	
10 and 7 per cent. Annuities at 24 years' purchase = £25,752	£32,543 12*s.* 7*d.*	£370	£450	—	Per 1,000 ft. 5*s.*	Per 1,000 ft. 5*s.*	John Swan
		£820. 25th March, 1880					
£13,700	£18,000 (taking into account amount expended out of Revenue)	£500	—	—	4*s.* 2*d.*	Gross sum of £600, charged for Public Lighting.	John Woodward
		£962 14*s.* 25th December, 1879					
£10,268	£14,500, at 4½ per cent.	Nil.	—	886 9 4	5*s.* 6*d.*	—	J. G. O'Farrell
		£886 9*s.* 4*d.* Half-year, 25th March, 1879					
£7,000, upon Company's Share Capital of £3,000	£13,000	—	—	—	3*s.* 6*d.*	3*s.* 6*d.*	James Redman
		£200. 1879					
£9,179 1*s.* 6*d.* upon the Company's Capital of £7,000, at 7½ per cent. dividend	£9,897	Redemption and Interest. 578 3 1	—	—	5*s.*	—	Henry Webb
		£815 16*s.* 3*d.* (gross). 29th Sept., 1879					

diate reduction in the price of gas to 4*s.* 6*d.* per 1,000 feet. The writer was also considerably influenced by the fact that no inconsiderable outlay might shortly prove necessary in the shape of renewal of mains throughout the entire district, owing to the considerable leakage of gas that appears to exist. This view was adopted by Alderman James H. Lucas and a number of the council, in favour of supplying the borough with cheaper gas, but ultimately defeated on a close division, and the construction of new works has since been undertaken. The expenditure on the new works is expected to reach £12,500.

LONDON GAS SUPPLY.

Statistics of Gas Undertakings under the Management of Local Companies.

1.—GAS LIGHT AND COKE COMPANY.

Including the Districts of the late Imperial, Great Central, Independent, City of London, Equitable, and Western Companies, since amalgamated with the Gas Light and Coke Company.

2.—*PHŒNIX GAS LIGHT AND COKE COMPANY.

3.—LONDON GAS LIGHT COMPANY.

4.—COMMERCIAL GAS COMPANY.

Including the District of the late Ratcliffe Gas Company, since amalgamated with the Commercial Gas Company.

5.—SOUTH METROPOLITAN GAS LIGHT AND COKE COMPANY.

6.—*SURREY CONSUMERS' GAS LIGHT AND COKE COMPANY.

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* NOTE.—The Surrey Consumers have, since the 30th June, 1879, and the Phœnix, since 1st January, 1880, amalgamated with the *South Metropolitan Gas Light and Coke Company.*

Statistics of London Gas Undertakings under the Management of Local Companies.

GAS LIGHT AND COKE COMPANY'S SUPPLY.

		*1866.	1879.
1.	Chairman of Company	—	The Honble. R. Howe Browne, *Deputy Chairman.* Ed. Vaughan Richards, Q.C.
2.	Tons of Coal used	701,105	1,202,774
3.	Amount of Gas made in cubic feet	(not known)	12,194,621,000
4.	Do. sold do.	5,586,034,551	§11,403,803,000
5.	Illuminating Power of Common Gas	12-candle Gas	16-candle Gas.
6.	Amount of Ordinary Share Capital £	3,570,755 0 0	7,372,745 0 0
	Debentures and Loans	624,348 0 0	1,643,510 0 0
	Total Capital.	4,195,103 0 0	9,016,255 0 0
7.	Gross Profit on Working for the year	362,629 8 10	787,495 17 11
	Dividends on Ordinary Share and Preference Capital.	†324,590 11 11	‡653,323 6 11
	Interest on Debentures and Loans	37,051 11 1	73,282 11 0
8.	Surplus Profits, applicable now to Reserve and Insurance Funds, Commutation of Annuities, Interest on Temporary Loans, &c.	987 5 10	60,890 0 0
9.	Amount of Reserve and Insurance Funds to date	158,297 0 0	229,008 16 2
10.	Price of Gas per 1,000 feet	Each Company charged 4*s.* except the Independent, 3*s.* 4*d.* for Common Gas, and uniformly 5*s.* 6*d.* for Cannel Gas.	3*s.* 6*d.* (Common) 4*s.* 4*d.* (Cannel)
11.	Name of Secretary and Engineer	—	J. Orwell Phillips, *Secretary.* George C. Trewby, M. Inst. C.E.

* To make this comparison complete, it has been necessary to include in the results of 1866 the Imperial, Great Central, Independent, City of London, Equitable, and Western Gas Companies, since amalgamated with the Gas Light and Coke Company.

† The Gas Light and Coke Company's dividend amounted to 8¾ per cent.; the Imperial, 10 and 7 per cent.; the Great Central, 10 per cent.; the Independent, 10, 5, and 7½ per cent.; the City of London, 10, 8 and 4 per cent.; the Equitable, 10 per cent.; and the Western, £9 18*s.* 2*d.* per cent.

‡ The dividend on the ordinary stock was 10½ per cent., but the price of gas has been reduced from 1st January, 1880, to 3*s.* 4*d.*, to admit of a dividend of 11 *per cent. under the provisions of the sliding scale.*

§ The leakage is 5·3 *per cent.*, taking into account the gas used on the Company's premises.

Statistics of London Gas Undertakings under the Management of Local Companies.

PHŒNIX GAS LIGHT AND COKE COMPANY'S SUPPLY.†

		1866.	1879.
1.	Chairman of Company	—	E. Horner
2.	Tons of Coal used	103,471	183,637
3.	Amount of Gas made in cubic feet	(not known)	1,843,593,000
4.	Do. sold do.	839,088,000	*1,754,970,000
5.	Illuminating Power of Common Gas	12-candle Gas	Although under the provisions of the Metropolis Gas Act, 1860, the Company voluntarily supplied 16-candle Gas.
6.	Amount of Ordinary Share Capital	£774,000 0 0	1,208,000 0 0
	Debentures and Loans	114,620 0 0	Nil (½ year Dec.)
	Total Capital	888,620 0 0	1,208,000 0 0
7.	Gross Profit on Working for the year	68,458 12 7	111,707 3 3
	Dividends at 10, 5, and 7½ per cent. on Ordinary Share and Preference Capital.	65,925 0 0	102,150 0 0
	Debentures and Bonds	5,736 8 0	1,131 11 2
8.	Surplus Profits, applicable to Reserve Fund, &c.	−2,736 8 0	8,425 12 1
9.	Amount of Reserve Fund to date	9,644 0 0	123,675 19 5
10.	Price of Gas per 1,000 feet	4*s.* (Town) 4*s.* 3*d.* (Country)	3*s.* 4*d.*
11.	Name of Secretary and Engineer	—	J. A. Crookenden, *Secretary.* Corbet Woodall, M. Inst. C.E.

* The leakage is only 3·7 *per cent.*, taking into account the Gas used on the Company's works.

† This Company has been amalgamated with the South Metropolitan since 1st January, 1880.

Statistics of London Gas Undertakings under the Management of Local Companies.

LONDON GAS LIGHT COMPANY'S SUPPLY.

	1866.	1879.
1. Chairman of Company	—	Major Rhode Hawkins.
2. Tons of Coal used	89,946	154,465
3. Amount of Gas made in cubic feet	(not known)	1,529,853,000
4. Do. sold do.	742,663,000	*1,435,965,000
5. Illuminating Power of Common Gas	12-candle Gas	Although under the provisions of the Metropolis Gas Act, 1860, the Company voluntarily supplied 16-candle Gas.
6. Amount of Ordinary Share Capital	£617,475 0 0	£760,810 0 0
Debentures and Loans	108,155 0 0	99,549 0 0
Total Capital	725,630 0 0	860,359 0 0
7. Gross Profit on Working for the year	50,941 11 8	73,111 4 5
Dividends at 5, 6, and 10 per cent. on Ordinary Share and Preference Capital.	46,483 16 7	61,095 14 3
Debentures and Bonds	6,709 9 3	4,553 1 8
8. Surplus Profits, applicable to Reserve Fund, &c.	-2,251 14 2	7,462 8 6
9. Amount of Reserve Fund, &c., to date	(none)	83,566 18 5
10. Price of Gas per 1,000 feet	4*s.*, 4*s.* 6*d.*, & 5*s.* (Common) 5*s.* 6*d.*, 6*s.* (Cannel)	† 3*s.* 3*d.*
11. Name of Secretary and Engineer		A. J. Dove. *Secretary.* Robert Morton, M. Inst. C.E.

* The leakage is 5·0 per cent., taking into account the gas used on the Company's works.

† The price of this Company is now reduced from 3*s.* 3*d.* to 3*s.* This Company is not, however, under the provisions of the sliding scale.

Statistics of London Gas Undertakings under the Management of Local Companies.

COMMERCIAL GAS COMPANY'S SUPPLY.

		*1866.	1879.
1.	Chairman of Company	—	Richd. Bradshaw.
2.	Tons of Coal used	92,695	147,965
3.	Amount of Gas made in cubic feet	(not known)	1,507,898,000
4.	Do. sold do.	773,492,000	§1,375,715,000
5.	Illuminating Power of Common Gas	12-candle Gas	16-candle Gas
6.	Amount of Ordinary Share Capital	£537,220 0 0	620,000 0 0
	Debentures and Loans	14,500 0 0	70,000 0 0
	Total Capital	551,720 0 0	690,000 0 0
7.	Gross Profit on Working for the year	†58,340 13 3	83,348 9 11
	Dividends on Ordinary Share and Preference Capital.	53,718 10 5	‡67,650 0 0
	Debentures and Loans	477 14 8	3,150 0 0
	Surplus Profits, applicable to Reserve Fund.	4,144 8 2	12,548 9 11
8.	Amount of Reserve Fund, &c., to date	8,317 0 0	40,291 14 8
9.	Price of Gas per 1,000 feet	4*s.* (Commercial) 4*s.* 6*d.* (Ratcliffe)	3*s.* 5*d.* 3*s.* 3*d.*
10.	Names of Secretary and Engineers	—	H. D. Ellis, *Secretary.* Robert Jones, M. Inst. C.E. H. E. Jones, M. Inst. C.E.

* Including the Ratcliffe Company.

† The Commercial Gas Company's dividend was 10 per cent.; the Ratcliffe Company's, ditto.

‡ The dividend on the old stock was at the rate of 11 and 11½ per cent., and on the new stock 8 and 8½ per cent., under the provisions of the sliding scale.

§ The leakage is 7·7 per cent., taking into account the gas used on the Company's premises.

Statistics of London Gas Undertakings, under the Management of Local Companies.

SOUTH METROPOLITAN GAS LIGHT AND COKE COMPANY'S SUPPLY.

	1866 (31st Dec.)	*1879 (30th June.)
1. Chairman of Company	—	Capt. Heathorn.
2. Tons of Coal used	48,484	114,264
3. Amount of Gas made in cubic feet	(not known)	1,141,623,000
4. Do. sold do.	417,908,000	§1,062,018,000
5. Illuminating Power of Common Gas	12-candle Gas	16-candle Gas
6. Amount of Ordinary Share Capital	£222,950 0 0	500,000 0 0
Debentures and Loans	Nil	Nil
Total Capital.	220,950 0 0	500,000 0 0
7. Gross Profit on Working for the year	21,033 5 9	70,625 0 9
Dividends on Ordinary Share and Preference Capital.	†20,682 15 10	‡56,925 0 0
Interest on Debentures and Loans	Nil	Nil
Surplus Profits, applicable to Reserve and Insurance Funds, &c.	350 9 11	13,700 0 9
8. Amount of Reserve and Insurance Funds, &c., to date.	20,000 0 0	34,406 5 7
9. Price of Gas per 1,000 feet	3*s.* 2*d.* & 3*s.* 4*d.*	3*s.*
10. Name of Secretary and Engineer	—	George Livesey, M. Inst. C.E.

* This is the last Annual Statement previous to amalgamation with the Surrey Consumers.

† Dividend declared, 10 per cent.

‡ The dividend was 11½ per cent. under the provisions of the sliding scale.

§ The leakage is 6·0 per cent., taking into account the gas used on the Company's premises.

Statistics of London Gas Undertakings under the Management of Local Companies.

SURREY CONSUMERS' GAS LIGHT AND COKE COMPANY'S SUPPLY.*

		1866 (31st Dec.)	1879 (30th June).
1.	Chairman of Company	—	Benjamin Duvall
2.	Tons of Coal used	37,207	56,537 (Estimated)
3.	Amount of Gas made in cubic feet	(not known)	558,246,338 (Estimated)
4.	Do. sold do.	294,332,000	§528,964,000 (Estimated)
5.	Illuminating Power of Common Gas	12-candle Gas	Probably 16-candle Gas
6.	Amount of Ordinary Share Capital	£200,000 0 0	£250,000 0 0
	Debentures and Loans	42,000 0 0	60,000 0 0
	Total Capital	242,000 0 0	310,000 0 0
7.	Gross Profit on Working for the year	23,538 10 8	42,647 19 0
	Dividends on Ordinary Share and Preference Capital.	†19,000 0 0	‡22,760 8 4
	Interest on Debentures and Loans	2,120 16 8	2,940 11 1
	Surplus Profits, applicable to Reserve Fund.	2,417 14 0	16,945 19 7
8.	Amount of Reserve Fund to date	Nil	25,306 14 8
9.	Price of Gas per 1,000 feet	4*s.* 6*d.* & 4*s.*	3*s.* 9*d.*
10.	Name of Secretary and Engineer	—	W. J. Boddy, *Secretary.* Henry Finlay, *Engineer.*

* The Company has been amalgamated with the South Metropolitan since 30th June, 1879.

† Dividend declared, 9 per cent.

‡ Dividend declared, 10 per cent.

§ The leakage is only 4·2 per cent., taking into account the quantity used on the Company's premises.

WATER SUPPLY.

I. THE PURCHASE OF WATER WORKS.

II. STATISTICS OF WATER UNDERTAKINGS UNDER THE MANAGEMENT OF LOCAL AUTHORITIES.

III. STATISTICS OF LONDON WATER UNDERTAKINGS UNDER THE MANAGEMENT OF LOCAL COMPANIES.

THE PURCHASE OF WATER WORKS.

WATER.—"May be collected from drainage areas, where the quantity of rain happens to be greater than that which evaporates and sinks into the earth; again, it may be taken from rivers, streams, or lakes, which are themselves supplied chiefly from drainage areas; or, lastly, it may be taken from wells or springs, where the water has accumulated after passing through strata and rocks of various kinds."

Treatise on Water Works for Cities and Towns.—SAMUEL HUGHES.

THE movement in favour of the acquisition of water works by local authorities has made considerable progress during the last two years. The reason may chiefly be sought in the growing requirements of our water supplies, which are annually assuming such portentous dimensions that they will soon have to be anticipated by several years, if the necessities of increasing boroughs are to continue to be met upon the present scale of supply. Where, consequently, such extensions are in prospect, it is quite reasonable that the undertaking should be secured at the earliest opportunity, in order that all capital required for the new works should be obtained at the very lowest rates of interest. Another reason which cannot fail to influence a corporation very much is that, notwithstanding the provisions of the Water Works Clauses Act, 1847, anticipating, under section 80, a rateable diminution in the rates charged for water, reductions in water rates by companies are still practically unknown. There is, moreover, a well-founded belief that these charges are occasionally increased, in consequence of the additions to rateable value of property, under which the companies often take advantage to revise their water charges, and, so far as can be judged, with the statutory interpretation in their favour. Still, it must be admitted that the water companies, except in a few instances, have certainly not been addicted to declaring large dividends; the ruling profits are rarely in excess of 6 or 7 per cent. upon paid-up capital, and, considering that they have been the pioneers of health, it cannot be gainsaid that they are entitled to a good deal of consideration at our hands. The supply of water was certainly, in 1847, placed by the Legislature upon the same footing as that of gas, which it may have then occupied; but the event has proved since that, in so far as a capacity for earning profit is concerned, the two supplies are entirely dissimilar; the elasticity of profit in a gas supply will never be found

to exist in water supply, and the increment of profit in the latter is reduced to the very lowest proportions.

Careful inquiry into the subject will reveal that the great development and success attending the supply of gas is attributable to the circumstance that the increase is not due to new consumers alone, but to increased consumption on the part of original consumers—waste it may perhaps be described as, but which is nevertheless paid for integrally. The same increase takes place in the consumption of water; an enormous and increasing waste of water, in addition to the legitimate supply to new tenements, has annually to be provided against by companies and corporations, with this difference, that it is not paid for; and this must and ever will restrict the profits of any well-conducted concern to 6 or 7 per cent. upon the necessary outlay.

This view illustrates also the responsibility and difficulty attending the proper management of a water undertaking, wherein any excess of working expenses must always imperil the dividends or annuities payable on account of the capital outlay; and, although there are exceptions to the rule, it may be pretty safely asserted that those water companies who have succeeded in dividing 10 per cent. have done so only on the principle of levying water rates in excess of reasonable charges.

There is no subject that should be approached with greater caution than the purchase of a water undertaking by the local authorities, as, should they by mischance pay more than the value of the undertaking, it is questionable if they will ever recover the lost ground. This is just the converse of our practice with gas works, in which high prices are frequently paid with no worse result than that of deferring surplus profits a few seasons. In the supply of water, it may be pointed out that there is no prospective economy to be derived from a new supply; and yet in less than a decade, and sometimes almost as soon as the works are acquired, the question of new works forces itself upon the attention of the water committee, and invites occasionally a very large outlay in new schemes for extending the supply. It is needless to travel over previous ground; but the chief inducement of water companies—as in the case of gas companies—for selling on voluntary terms to the authorities will always be found in the approaching exhaustion of their sources of supply, and the increased difficulty of maintaining their dividends in presence of any new schemes having to be carried out.

With respect to corporations acquiring water works, there can be no question that the sole object in view should be that of reducing the scale of the water rates actually charged, and that this should be the constant aim of the corporation, so long as they are able to maintain an efficient and pure supply of water.

There can be no object gained by making surplus profits out of a water undertaking, since every taxpayer is already rated for the supply. To make surplus profits in relief of rates, by maintaining the scale of water charges, would merely, in this instance, be doing in an indirect and wasteful fashion that which can be done more efficiently by at once lowering the scale as much as the working expenses and capital charges will admit, taken in conjunction with the redemption of capital.

The water companies do not redeem capital; this is the great blot on the management of gas and water companies alike, and creates an additional charge upon the ratepayer, which should, however, be borne. The reserved funds of companies, instead of being devoted to this object, are merely accumulated as a security for the companies' dividends. It should therefore be considered a great step in local improvement, where, as one of the earliest consequences of purchase, due provision in the shape of sinking funds is annually made for writing off the large sums invested previously without redemption by the gas and water companies. The sinking funds usually provide for the extinction of capital within a range of 60 to 80 years.

It is quite beyond the scope of these remarks to include any special account or analysis of the extensive water supplies originated by some of our large corporations many years ago, and which we should expect to find now in a very flourishing condition. The reduction of water rates to the lowest limits has undoubtedly been the aim of nearly all the corporations, and there are not wanting signs that this has not always been done discreetly; in some towns—manufacturing districts, there is also a serious inequality between the charge for water supplied to the manufacturers and that contributed by the ratepayers, in which the latter are charged an excess, in order to compensate the low rate at which the manufacturers receive their supply.

This hardly seems right, any more than supplying water at rates which notoriously will not entirely cover the charge for interest and redemption of capital. In this manner annual deficiencies have been incurred in connection with some of the more ambitious water schemes, where the consumption per head of population is very high. A feature common to nearly all water supplies at present is the enormous waste, which is tacitly recognized by an excess of distribution, and a want of proper regulation and supervision of the fittings.

In considering the extent to which the supplies to our large cities have grown, within the appreciable limit of say ten years, no one will fail to be convinced that the present rate will have to be controlled in a very different manner than it is at present, or else the next decennial period will find corporations committed to schemes of such propor-

tions that the communities will on no reasonable terms be able to meet the capital charges due upon them.

It is easy to understand how a corporation, pledged to economy and low rates, will do anything rather than acknowledge the necessity for revising the water rates; but if the fashion for huge gravitation and compensation schemes, in order to administer to the present scale of extravagant waste, must be continued, then the sooner this revision is made the better, because those who have to pay for it will learn, ere it be too late, the cost of waste and improvidence, even in such an article as water.

Liverpool, by far the most populous provincial city, was furnished with a daily supply of 15½ million gallons in 1868. This has increased, upon a reduced supply, to 17¾ millions; and the scale of the real increase may be inferred from the fact that it is now calculated that in 1885 there must be a deficiency of 7 millions, which has to be provided against by the new Vyrnwy water scheme. Glasgow has increased, within a decennial period, from 27 million gallons to 37½ million gallons; Manchester, from 13½ million gallons to between 17 and 18 million gallons; Edinburgh, from 7½ million gallons to 11⅓ million gallons; Bradford, from 6 million gallons to 8¾ million gallons; Newcastle-on-Tyne, from 5½ million gallons to 9 million gallons; Leeds, from 4¼ million gallons to 7 million gallons; Sheffield, from 3 million gallons to 4¾ million gallons; Sunderland, from 3 million gallons to 4¼ million gallons; Nottingham, from 2½ million gallons to 3½ million gallons; Dundee, from 2½ million gallons to 5¾ million gallons; Preston, from 2 million gallons to 2¾ million gallons; Croydon, from 1¼ million gallons to 2¾ million gallons; Leicester, from 1 million gallons to 2½ million gallons; Derby, from ¾ million gallons to 2 million gallons. The remarkable inequality in the extent of the supply could scarcely be better illustrated than by the contrast of two places so dissimilar as Preston and Croydon. A perfect comparison of the percentage of increase in the amount of daily supply can hardly be formed for the decennial period until the Census is completed, but there is hardly room for any doubt that the increase in water supply has far outstripped the increase in population. It need scarcely be stated that so great an increase in supply has generally necessitated a corresponding expenditure of capital in new reservoirs, filter beds, duplicate pumping engines, mains, and services. In the course of the London Water Supply inquiry last year, there appeared to exist in some quarters an opinion that the metropolitan water undertakings might be conducted without any further annual outlay of capital. This is certainly a delusion, as reference further on to the progress of several sound corporation water undertakings upon recent acquisitions will show.

These remarks aim chiefly at proving how necessary it is, where water works purchases are under consideration, to arrive at a clear view of the future liabilities which this acquisition will legitimately incur, and not to confuse them amidst a visionary increment of profit.

No doubt each case must be considered upon its own merits, and some purchases will enjoy prospects of advantages denied to others; but a close investigation of this subject induces the conviction that a number of the late purchases have been made upon entirely false premises of value. The want of proper data, whereby to compare the various purchases of water undertakings, will perhaps explain the extraordinary diversity in prices paid recently. The difference in the relative amount of working expenses, in the case of pumping *versus* gravitation schemes, also introduces an element which to any but an expert must prove confusing. In the gravitation schemes it is well to remember that the outlay of capital is greater, but the working expenses should be much less than on pumping schemes. In any valuation it is therefore of the highest consequence to ascertain if there is any departure from this rule, for any excessive working expenses must depreciate the value of the concern to the buyer in a large measure. These, however, are merely some of the points to which the investigation of experts can be usefully directed in reporting on an intended purchase.

The particulars of the most recent purchases will be found in the accompanying statement. As information, the accuracy of which may be relied upon, they will doubtless prove sufficiently interesting. They go, however, a little beyond this. The amount of rental per million affords some idea as to whether high or low rates prevail in the locality, and the amount required to pay annuities and interest per million gallons affords a useful clue to the amount of capital invested by the local authority at the date of purchase.

The difference between the rental and the amount required to pay annuities and interest affords in some cases a good approximation of the working expenses, *i.e.*, when the dividends previously paid by the company are nearly equal to the annuities.

Recent Transfers of Water Works to Local Authorities.

Date of Transfer.	Population supplied.	Name of Company and amount of Water supplied per annum in Million Gallons.	Rental per Million Gallons.	Annuities or Purchase-money paid upon Company's paid-up Capital.		Annuities.	Interest.	Amount required to pay Annuities and Interest per Million Gallons.
			£		£	£ s.	£ s. d.	£
1868	68,291	Wolverhampton Water Works Co. **533**	24·88	Original Share Capital (p.c.) 5 p.c. Preference do. . Terms 4 p.c. an. (1872). Debentures £86,246 at 4 p.c.	100,000 24,415 124,415	3,720 15	4,183 6 8 7,904 1*s.* 8*d.*	**14·83**
1868	32,324	Reading Water Works Co. **396**	—	Share Capital (p.c.) Terms 7 p.c. an. Mort. debt £14,000 at 4¼ p.c.	42,000	2,940	595 3,535	**8·93**
1869	175,000	Dundee Water Works Co. **842**	25·50	Perpetual Annuities—£14,315 at 25 years' purchase . . . . Mort. debts of Water Company £43,579.	329,245	14,315	1,852 15,167	**18·00**
1870	246,750	Edinburgh Water Works Co. **2,301**	19·19	Share Capital (6½ p.c.) Terms 6 p.c. an. Cash payment £22,000. Mort. debt £133,000.	414,000	24,840	6,587½ 31,427½	**13·64**
1872	26,776	Lincoln Water Works Co. **145**	31·16	Share Capital (10 p.c.) Do. (7½ p.c.) Bond debt £7,200. Award £63,837, including Bond debt.	18,000 9,000 27,000	at 4½ p.c. 2,713	Nil 2,713	**18·71**
1872	107,790	Brighton, Hove, and Preston Water Works Co. **864**	26·71	Share Capital (7 p.c.). Terms £160 for every £100 of paid-up Capital— ∴ Max. Dividends 8 p.c. capitalized at 20 years' purchase = £321,156 11*s.* 8*d.* Mort. £27,000. Reserve Fund £6,000. (Divided by Compy.)	218,000	at 4½ p.c. 14,452	1,124 15,576	**18·03**
1876	481,000	Birmingham Water Works Co. **2,880**	31·07	Share Capital (8 p.c.). Do. (7 p.c.). Terms ∴ £3,022 in cash. Annuities £54,491. Mort. £189,000 at 4, 4¼, 4½ p.c.	420,000 252,000 672,000	54,491	3,790 58,281	**20·24**
1877	15,466	Taunton Water Works Co. **43⅓**	44·00	ShareCapital (7 to 8 p.c.) Terms £166⅔ for each £100— ∴ £20,000. Mort. £3,000 at 4½ p.c.	12,000	at 4¼ p.c. 850	135 985	**22·80**

Recent Transfers of Water Works to Local Authorities.

Date of Transfer.	Population supplied.	Name of Company and amount of Water supplied per annum in Million Gallons.	Rental per Million Gallons.	Annuities or Purchase-money paid upon Company's paid-up Capital.		Annuities.	Interest.	Amount required to pay Annuities and Interest per Million Gallons.
			£		£	£	£	£
1877	24,000	Ramsgate (Isle of Thanet) Water Works Co. **144**	34·72	Share Capital (10 p.c.) Expend. out of Revenue Terms £70,436.	15,000 19,000 34,000	at 4¼ p.c. 3,085 3,085	Nil	**21·42**
1878	125,000	Leicester Water Works Co. **800**	31·48	Share Capital (7 p.c.). Terms, Shares converted into 4 p.c. Stock at the rate of £43 15*s.* for each £25 Share— ∴ £402,500. Debenture Stock £49,934. Debentures £9,750.	230,000	15,766 18,104	2,338	**22.63**
1878	75,078	Stockton and Middlesbrough Water Works Co. **2,160**	19·82	Old Stock (10 p.c.) . Do. (8 p.c.) . Preference Stock (5 p.c.) Terms, 25 years' purchase of Max. Dividends— ∴ £18,647 × 25 = Mr. Higgins', Q.C., award for compulsory sale and prospective value . . Stockton and Middlesbrough Water Company's debts, including original loan of £62,000	32,500 150,087½ 67,800 250,387 466,175 213,802 121,137 801,114	at 4¼ p.c. 34,000 34,000	Nil	**15·74**
1878	38,000	Exeter Water Works Co. **432**	21·96	Share Capital (6 p.c.). Terms 8 p.c. Annuities (£4,000) redeemable at £47 per £25 Sh.— ∴ £94,000. Deben. £16,000 at 4¼ p.c. Lloyd's Bonds £5,419 at 5 p.c.	50,000	at 4¼ p.c. 3,995 4,945	950	**11·45**
1878	24,259	Scarborough Water Works Co. **288**	31·70	Share Capital (9 p.c.). Do. (7½ p.c.). Terms 9 and 7½ an. Mort. £17,100.	35,000 30,000 65,000	5,400 6,126	726	**21·27**

Recent Transfers of Water Works to Local Authorities.

Date of Transfer.	Population supplied.	Name of Company and amount of Water supplied per annum in Million Gallons.	Rental per Million Gallons.	Annuities or Purchase-money paid upon Company's paid-up Capital.		Annuities.	Interest.	Amount required to pay Annuities and Interest per Million Gallons.
			£		£	£	£	
1880	181,000	Nottingham Water Works Co. **1,224**	31·00	Share Capital (5 p.c.). Terms 6¼ p.c. an. (1881) 6¾ p.c. an. (1882) 7 p.c. an. (1883) Bonus £30,000. Mort. £32,050.	399,960	26,000	2,637	**23·39**
						28,637		
1880	60,233	Cardiff Water Works Co. **720**	24·50	Original Stock (12 p.c.)	45,000	12,750	870	**19·00**
				Do. (7½ p.c.). . . .	45,000			
				New do. (7½ p.c.) . .	31,631			
				Gross Profits about £12,000.	121,631	13,620		
				Terms £300,000, or within 27 years' purchase of Max. Dividends ∴ £11,147. Co. retained Res. Fund £5,485 10*s.* 9*d.* Mort. £20,450. (taken over.)				
1880	26,343	Colchester Water Works Co. **216**	—	Ordinary Stock (p.c.)	35,000	3,451	Nil	**16·00**
				Gross profits about £2,900.		3,451		
				Terms, Purchase-money under award, £81,218 10*s.* 4*d.*— ∴ 25 years' net profits 10 p.c. for prospective value.				
1880	49,810	Derby Water Works Co. **720**	20·37	Share Capital (6 p.c.).	136,000	10,720	2,212	**18·00**
				Gross Profits about £6,890.		12,932		
				Terms ∴ Annuities (1880) £10,720 Do. (1885) 1,120 £11,840 At 25 years' Purchase ∴ £296,000 Bonus 12,000	£308,000			
				Debt 4 p.c. £43,300				

There is hardly room for any doubt that some of the late water purchases have been entered into upon a scale of valuation that must result in eventual losses to the water committees; it is more satisfactory, therefore, to draw attention to places like Wolverhampton and Brighton, where the corporations obtained a proper equivalent for their outlays and efficient water works. At Exeter the water works were scarcely obtained cheaply, but are certain to prove a success in the hands of their able borough engineer, Mr. Boulnois, M. Inst. C.E.

The purchase of the Edinburgh Water Works was merely, as is well known, a provisional step towards the establishment of a new water supply. The like applies to Dundee, where the Lintrathen scheme has since been carried out.

At Leicester the undertaking appears very promising, according to early results.

This also applies more particularly to the Birmingham purchase, which has turned out very satisfactorily, and on which the net profits have already reached the sum of £10,702. This result, as the outcome of a water purchase, is, however, quite unprecedented, the nearest instances of a similar result in the case of any class of water undertaking under municipal management being those of Oldham and Birkenhead. The inception of the Birmingham water purchase, as in the case of all the late improvements at Birmingham, is due to the Right Hon. Joseph Chamberlain, M.P.; the negotiations for the sale were, however, carried out by Mr. Alderman Avery. A considerable degree of importance has attached lately to these negotiations, and the amount of the consideration given has been variously estimated as high as $28\frac{6}{10}$ years' purchase of the net profits. The mode of arriving at this figure consists in capitalizing the annuities paid—£54,491 × 25 = £1,362,275; add £3,022 for winding-up purposes, the total reaches £1,365,297. Dividing this sum by the profits in the *previous* year, 1874—£47,712—the result works out as above. Dividing, however, the total by the profits of 1875, the result only amounts to $25\frac{3}{4}$ years' purchase of the profits. It is more correct, however, to represent the transaction as $26\frac{2}{3}$ years' purchase of the statutory dividends. For this the corporation received an undertaking the extent and resources of which are acknowledged to have been entirely exceptional. *The works were reputed in* 1876 *to be capable of affording a daily supply of* $17\frac{1}{3}$ *millions*; that is to say, more than *double* the actual supply distributed at the time, viz., $8\frac{3}{4}$ millions. It is surely in this that will be found the justification for conceding what under any other conditions must certainly have been acknowledged to be unprecedented terms. The daily supply at Birmingham, in fact, only now reaches 10 millions per day. The sum of £54,491 annuities was agreed upon as representing:—

1. The statutory maximum dividend on all the capital of the company called up, *i.e.*:—		
£420,000 at 8 per cent.	£33,600	
252,000 „ 7 „	17,640	
		£51,240
2. Three per cent. per annum on the value, as on 1st January, 1876, of uncalled capital (capital to remain uncalled), such value being ascertained on the footing that the capital would have been called up by five equal half-yearly instalments (the first payable 1st July, 1876), and the capitalization of those five calls being calculated on a 4 per cent. basis, *i.e.*, 3 per cent. on £84,000, payable by five equal half-yearly instalments, and capitalized at 4 per cent., equals an annuity of		2,376
3. Four per cent. per annum on the capital value, as on the 1st of January, 1876, of one-half of the back dividends the company would have been entitled to pay out of future profits, such value being ascertained on the footing that such one-half of the back dividends would have been payable by nine yearly instalments (the first payable on the 1st of January, 1877), capitalization again being calculated on a 4 per cent. basis, *i.e.*, 4 per cent. on £26,260 0*s.* 8*d.* (the amount of half the back dividends) payable by nine yearly instalments, and capitalized at 4 per cent., equals an annuity of		875
Total annuities...		£54,491

A closer examination, however, of these terms discloses that they are likely to convey a precedent for other purchases, the application of which would involve consequences of far greater import than those resulting to the Birmingham case.

The capitalization of back dividends converted into annuities may not have contributed to increase the Birmingham annuities much, but a similar application of this principle to some of the London water undertakings would involve the capitalization of thousands of unearnt dividends, and influence the result considerably.

In like manner, the allowance of three per cent. on unissued capital would destroy the prospects of a large majority of purchases, where, as is usually the case, there would be found a considerable proportion of unissued capital to apply it to.

The Birmingham Water Company's authorized capital consisted of £756,000, out of which 88 per cent. was issued ; the balance, amounting to £84,000, was relatively a small matter in their case, but this would not be found to be so in general. In the interest of future transfers, therefore, great exception must be taken to this section of the precedent, as in effect it completely cancels the chief advantage for which transfers are promoted—namely, the prospect of investing capital at lower rates in progressive undertakings ; by charging 3 per cent. extra-annuities upon a given amount of unissued capital, that

sum in future will be raised at exactly the same figure as the company would have done—viz., 7 per cent.

There can scarcely be any pretence that in water works at least there exists any greater advantage to be reaped than the issue of new capital at lower rates; the application, therefore, of that section of the precedent undoubtedly from the outset defeats the purposes of any subsequent transfer to which it may be applied.

Except in the case of Brighton, I believe that never have such valuable or efficient works been handed over to a corporation; and the unquestionable success which has attended the operations of the Birmingham Water Committee is most flattering to all concerned.

The next transfer following Birmingham in rank of importance is that of the Stockton and Middlesbrough Water Works. There is already such an overwhelming amount of evidence indicative of an excess of valuation in this case that criticism would seem quite superfluous but that there are indications that we have not already heard the last of this case as a precedent. The late Mr. E. J. Smith expressed it last year as his own opinion concerning the £213,802 which constitutes Mr. Higgins' award on this purchase, "That he was under the idea that the arbitrators and umpire had given a higher amount than it was supposed they would have to give; but, having examined the case, I feel bound to add," says Mr. Smith, "I do not think it was possible for them to give a smaller estimate than £213,802."

This argument, it appears subsequently, is founded upon the extent of the net profits, which were reputed to be £31,429 per annum, whilst the entire divisible profits were only £18,647. But it should be remembered that the company was at this time applying to Parliament for power to raise £300,000 at 6 or 7 per cent., which was to be employed in procuring an additional supply of 30 million gallons per week, and expended in additional pumping and distributory plant for this specific purpose. The company could never have claimed to maintain rates yielding such a considerable surplus, except for being pledged to introduce an additional supply altogether, which was acknowledged to be necessary. When this duty, by the decree of Parliament, devolved *not* on the company, but *on the Corporations* of Stockton and Middlesbrough, the company's extra profits could only be considered in the light of an overcharge for water rates, which they could never have presumed to maintain in the face of the Water Works Clauses Act, which under such circumstances defines accurately that a reduction in the rates charged for water must be made.

In addition to the sum payable to the company—*i.e.*, 25 years' purchase of the statutory dividends—Parliament decreed that the

corporations should take over and pay the statutory debt of the company at the time of the transfer, and all other debts and liabilities *bonâ fide* incurred, and also should pay to the company a sum *for compulsory sale and for the prospective value of the company's undertaking;* and, if any difference should arise in carrying into effect this provision, the same to be settled by arbitration in accordance with the provisions of the Lands Clauses Act, 1845, 1860, and 1869.

There is little doubt that the Committee who pronounced this decision never contemplated that a difference might ever arise upon the interpretation of the latter part of the section, for there are no precedents for paying more than 10 per cent. under this head in cases of compulsion. But 10 per cent. on the cost of the undertaking—£466,175—is only £46,617 10*s.*, whereas the extraordinary amount of £213,802 was really awarded by the umpire. This figure in itself bears the strongest evidence that it was an attempt on the part of the arbitrators to estimate the extra profits already alluded to. There is no evidence whatever that anything of the sort was ever contemplated; the decision of the arbitrator or umpire was merely invited as to the percentage for compulsory and prospective value upon the cost of the undertaking, already defined by the Committee at £466,175.

The effect of this award has been to deprive the corporations of the means of carrying out their original water scheme—the Balder and Lune—the purpose for which Parliament had actually sanctioned the compulsory purchase of the water undertaking, and to which the surplus profits were intended, of course, to contribute.

In estimating the position in which the united boards have been placed by this award, reference to the previous table shows that the amount required to pay the annual interest upon the capital outlay, deducted from the rental, leaves only a margin applicable to working expenses which is on the face of it insufficient, whilst for redemption of capital there is nothing at all.

The Nottingham water purchase, although high priced, is of a more reasonable character, for the corporation have received a magnificent undertaking, in perfect working order and equal to the future requirements of the town for several years to come, for 6½ per cent. annuities to begin with. It is worthy of notice, however, that in this case the annuities and interest will only leave next year a reduced margin for working expenses, and that this transfer, in common with all the late ones, does not afford those reasonable prospects for a reduction in the water rates without which a transfer seems quite aimless.

A new water company recently before the public alleged, as an inducement for shareholders to invest capital, that water works are bought up by municipal bodies invariably at a large premium, and

quoted the case of Cardiff, where they stated the premium to be 200 per cent., or £300 for each £100 of water works stock.

The late Cardiff water purchase unfortunately justifies this selection, and the terms are of such a description that they cannot enlist approval in these pages. The corporation gave 27 years' purchase of the statutory dividend. According to the test-statement here included, this amount scarcely leaves a sufficient margin for working expenses, even at the extremely low figure of £5,600, leaving no provision for redemption of capital or reduction of water rates. Since the purchase it is stated that the corporation have received a report to the effect that "the existing works are insufficient to maintain the proper water service to the district, and that, should a dry season occur next year, with the additional demand for water owing to the ordinary increase in population, the present works will be found to be dangerously inadequate." This report concludes with a recommendation for an immediate outlay of £85,000. This confirms amply the purposes for which the Cardiff Water Works Act, 1878, was passed. By this Act it was not proposed to enlarge the company's district, but to develop and improve the present sources and means of supply by the construction of additional reservoirs, filters, mains, and other works.

These notices must, however, be brought to a conclusion with that of the Derby water purchase—the latest on record. What motives can have induced this extraordinary transaction it is impossible to surmise. The net profits of the undertaking have not lately exceeded £6,890, and the company appear to have exhausted their reserve fund in paying even 6 per cent. on their capital. Notwithstanding this, the corporation have agreed to pay annuities of £10,720, rising to £11,840 (1885). A bonus of £12,000 has also been paid, and the bond debt, £43,300, is taken over by the corporation. The rental of this company for the year ending June 1879 was £14,664 19*s.* 6*d.*, and the engagement entered into by the corporation amounts to paying for annuities and interest alone £12,932 per annum at once. The working expenses alone amount to £6,042 2*s.* 10*d.* per annum, for which there is consequently scarcely any provision whatever—no provision for redemption of capital, and no provision for reduction of water rates. The balance of profit was really £6,890 16*s.* 8*d.*, which the company supplemented by £850 18*s.* 5*d.* from the reserve fund to maintain a dividend of £6 per cent.

As a sequel to this purchase I find in an engineering paper * the following note :—

"Since the Derby Corporation have become possessed of the undertaking of the Derby Water Company they find that to pay the purchase money and meet

* *The Review of Gas and Water Engineering.*

the necessary expenditure will bring them in debt for the next seven years or so. It has been the subject of some considerable anxiety how this shall be paid, and it has now been decided to make a standing debt for the next few years, to be liquidated after the extraordinary outlay has been met."

These precedents throw, it will be conceded, some light on the subject, and perhaps explain how the London ratepayers were invited last year to enter into an arrangement which bears a good deal of similarity to the Derby water purchase and some of its predecessors. Fortunately the agreements with the London water companies entered into by the late Mr. E. J. Smith did not receive the least approval of the Select Committee on London Water Supply last Session. There can be no question about the soundness of that decision. The Committee has recommended that a London Water Board be constituted, with powers to secure an improved supply according to such means they think best calculated to secure this important object, but any scheme submitted hereafter cannot be proceeded with until Parliament is again invited to pronounce upon its expediency and final adoption. These proposals may ultimately resolve into a regulation Bill, a purchase Bill, or a Bill for the introduction of a new supply. The London Water Supply Bill of the Government now pending confirms the probability that some important legislation will follow this Session; but the chief interest on this occasion is likely to be confined to the passing of the measure itself, which certainly raises the question of competition with the existing companies. The future prospects of the London water supply will also greatly depend upon the character of the representative body suggested by the Bill. What the London ratepayer has to guard against in this instance is the election of any representatives not thoroughly pledged to the policy of a reduction of water rates and a better provision for the health of the community by improved and more efficient means of filtration and distribution. Some guarantee that men of administrative talents and experience should alone be elected appears to be necessary, for in the municipal corporations the water committee is selected invariably from the best men in the council, and those more especially competent in questions of finance and engineering.

These are not easy to find, and certainly popular selection does not recommend itself much in such a case. The best means for attaining these results would be to divide the Metropolis into a number of water districts, each district to return one member to the board unopposed, or, if opposed, by public election, conducted unostentatiously after the manner of the election of guardians. It would be, however, in the qualifications required of the candidates that efficiency and security might be found—for instance, in addition to the usual household qualifications, he might be required to represent already the district in question, either in Parliament, in the Local

Vestry, in the Metropolitan Board of Works, the Common Council of the City of London, or the Commissioners of Sewers. Sufficient restrictions could also be put on the nomination of candidates to prevent the introduction of any person not absolutely representative of the locality.

It would, of course, always be within the discretion of this body to elect their own officers annually—chairman, engineer, assistant engineer, accountant, assistant accountant, and staff. To ensure, however, greater efficiency, the appointment of assessors or referees by the Board of Trade would introduce a professional element which would greatly add to the soundness of the Board's deliberations.

It seems fair to assume that by these means a body of representative men could be brought together, competent to discharge duties of a most important kind, upon the public grounds alone of health, economy, and sanitary improvement.

A regulation Bill might be the means of securing the abolition of back dividends; an equitable re-adjustment of the present water rates *on a definite and permanent basis;* a reduction from the present rates, more or less generally; regulation of capital—*i.e.*, a statutory restriction upon unlimited dividend where necessary, and further restriction upon new issues in the case of those companies who enjoy the monopoly of all their capital at maximum rates, which is contrary to the principles of the Legislature; regulation as to the issue of all new capital; the appointment of water referees to control the filtration and distribution of all the water supplied to the Metropolis. Compulsory powers to purchase the companies' undertakings within a defined limit of years might also form a very useful part of such a Bill. That a measure of this kind would effectually secure to the ratepayer nearly all the advantages he is now entitled to, on the grounds of economy and public health, is very probable. It is far from unlikely that, when the water companies find that Parliament will inevitably sanction a competitive measure in the interest of the consumers, they may be very glad to accept in lieu a regulation Bill drawn upon these lines, and thus avert the formation of a London Water Board.

The report of the Select Committee in connection with the purchase of the present water undertakings declared that it can only be entertained on fair and reasonable terms. Whatever the result, this will be found a most difficult condition to comply with. A close investigation of the companies' rentals confirms that in some cases they have developed upon a scale for which no precedent can be found within the range of previous municipal transfers; others approximate with the highest of these prevailing at the time, and there are two companies, in relation to the extent of supply, which appear below this scale.

In fact, it will be found that the highest rentals per million gallons supply an accurate index to those companies which have been enabled to declare the maximum statutory dividends of 10 per cent. The next category corresponds to dividends of 6½, 7½, 6½, and 8¾ per cent. Those with the lowest scale of rental correspond to the dividends of 6½ and 6 per cent. It is already in evidence that the water companies claim the value of their undertakings upon the scale of profits derived from these excessive rentals, without admitting of any deduction for depreciation of plant, working capital, or even allowances for those portions of the plant and works which are not, at least at present, adequate for distributing so large and increasing a supply, perfectly clear and efficiently filtered, at all periods of the year.

The difficulty which, from the outset, must inevitably confront any competent water board entertaining the purchase of the undertakings would be, how to pay the companies annuities equal to actual dividends while they are pledged to revise the water rates and execute those additional filtration and storage works which will be found essential for making the present supply satisfactory and acceptable *au point de vue de l'hygiène.* It must be insisted that upon this point the least misconception will incur most serious results, this outlay will prove a considerable one, and will counterbalance for several years to come any real increment of profit. Upon this point, nothing can add to the force and soundness of the views expressed in the report :—"It seems that the calculation of increments on which the agreements proceeded was founded on the assumption that all the items of receipt would grow at a greater rate in the future than in the past; that the number and the value of the houses and the rate of the rentals would perpetually augment; but that, on the other hand, the growth of capital expenditure which has hitherto been required in order to earn an increased income would sink almost to nothing, and might be discarded from the calculation. *This does not appear to be a sound basis of a financial estimate for the future.*" The least investigation upon the large capital outlays that have invariably followed previous transfers to municipal authorities will dispel any doubts upon this point; these pages bear ample testimony to the fact.

Upon the remaining point—that of an independent supply—probably a good many may have read, or may remember, a really beautiful simile first pronounced upon the subject by Sir William Harcourt at a recent banquet to the Metropolitan Board of Works :—"As in the human frame there is one stream of polluted blood which is flowing away from the heart, and another stream of fresh and pure blood which is coming into it, so, as you have already achieved the work of getting rid of impure water from this city of London, you have still to accomplish the work of bringing into it a plentiful

supply of pure water." This graceful allusion to the completed main sewerage schemes of the Metropolitan Board of Works has been considered to illustrate also Sir William Harcourt's predilections for an independent supply altogether from new sources.

Considering the rapid increase in the extent of supply, this view might indeed find considerable application in the matter of supplementing the actual river supply from independent sources rather than drawing any further increased supplies from the Thames. The present supply is actually drawn from three different sources—namely, the River Thames, the basin of the Lee, and the chalk wells in Kent. That, under a London Water Board, the latter source would be drawn upon to a very considerable extent towards meeting increased supplies, and might exercise a very salutary effect by incorporation with the river water, is no doubt likely; but in other respects the prospects of any gravitation supply abolishing the present river-water supplies are very remote. The success attending gravitation schemes generally is not altogether so complete as might be desired, and, indeed, experience tends to show that these schemes have to be supplemented by costly and extensive new works far oftener than was ever anticipated in the origin.

River supplies are likely to improve under an efficient application of the laws for preventing the pollution of rivers, and there is plenty of evidence to show that engineering science is fast grappling with the question of the successful disposal of sewage.

There is here appended a statement furnishing data of supply, rental, capital, and dividends of the water companies in 1879. It is presented in a form to admit of comparison with other towns already noticed, and will confirm in many respects the views expressed above.

London Water Supply 1879.

Population supplied.	Name of Company and amount of Water supplied per annum in Million Gallons.	Rental per Million Gallons.	Share and Loan Capital.		Dividend.	Interest.	Amount required to pay Dividend and Interest per Million Gallons.
		£		£	£ s. d.	£ s. d.	£
903,442	East London Water Works Co. **11,199**	18·00	Share Capital (6½ p.c.) . Deb. Stock £395,200.	1,624,710	107,741 16 5	17,201 12 4	**11·16**
					£124,943 8*s.* 9*d.*		
1,000,000	New River Water Works Co. **10,000**	38·83	Share Capital . . . . £9 19*s.* 11*d.* p.c. £10 17*s.* 1*d.* p.c. Preference and Deben. Stock £1,000,000.	2,019,958	210,602 7 9	39,354 8 0	**25·00**
					£249,956 15*s.* 9*d.*		
657,569	Southwark and Vauxhall Water Works Co. **8,774**	19·50	Share Capital (6 p.c.) . Preference and Debenture Stock . £910,700 Deb. and Loans 10,500 £921,200	868,800	52,570 6 2	43,132 17 7	**10·90**
					£95,703 3*s.* 9*d.*		
439,805	Lambeth Water Works Co. **4,957**	29·34	Share Capital (6½ p.c.) . Preference and Debenture Stock . £125,000 Debentures . 89,055 £214,055	1,182,860	72,852 15 2	9,335 1 7	**16·05**
					£82,187 16*s.* 9*d.*		
362,565	Grand Junction Water Works Co. **4,260**	31·51	Share Capital (7½ p.c.) . Preference and Debenture Stock . £170,500 Debentures . 79,500 £250,000	1,022,320	71,929 2 4	9,879 11 1	**19·20**
					£81,808 13*s.* 5*d.*		
400,505	West Middlesex Water Works Co. **3,803**	41·82	Share Capital (10 p.c.) . Pref. and Loans . Nil.	998,631	99,863 2 0	Nil	**26·26**
					£99,863 2*s.*		
240,000	Chelsea Water Works Co. **3,060**	30·91	Share Capital (6½ p.c.) . Preference and Debenture Stock . £535,100 Debentures . 2,000 £537,100	615,600	38,601 17 1	24,909 10 0	**20·75**
					£63,511 7*s.* 1*d.*		
285,660	Kent Water Works Co. **2,981**	28·88	Share Capital (8¾ p.c.) . Deb. and Loans £42,000.	626,849	54,409 14 2	1,735 0 0	**18·83**
					£56,144 14*s.* 2*d.*		
4,289,254	London (eight Companies). **49,034**	27·87	Share Capital . . . . Preference, Debenture, and Loan ditto . . .	8,959,728 3,359,555 £12,319,283	708,571 1 1	145,548 0 7	**17·42**
					£854,119 1*s.* 8*d.*		

MUNICIPAL WATER SUPPLY.

Statistics of Water Undertakings under the Management of Local Authorities.

1. MANCHESTER.
2. GLASGOW.
3. BIRMINGHAM.
4. LEEDS.
5. EDINBURGH.
6. BRADFORD.
7. BELFAST.
8. BOLTON.
9. NOTTINGHAM.
10. KINGSTON-UPON-HULL.
11. DUNDEE.
12. BRIGHTON.
13. LEICESTER.
14. ABERDEEN.
15. ASHTON-UNDER-LYNE.
16. OLDHAM.
17. STOCKTON & MIDDLESBRO'.
18. HUDDERSFIELD.
19. WOLVERHAMPTON.
20. HALIFAX.
21. CARDIFF.
22. GREENOCK.
23. SOUTHAMPTON.
24. MERTHYR TYDVIL.
25. PAISLEY.
26. BIRKENHEAD.
27. BURNLEY.
28. BURY (LANCASHIRE).
29. COVENTRY.
30. HASTINGS.
31. BARROW-IN-FURNESS.
32. EXETER.
33. WORCESTER.
34. READING.
35. GLOUCESTER.
36. CARLISLE.
37. LINCOLN.
38. PERTH.
39. ROTHERHAM.
40. DEWSBURY.
41. SCARBOROUGH.
42. BATLEY.
43. TUNBRIDGE WELLS.
44. DONCASTER.
45. LEIGH.
46. BEDFORD.
47. TRANMERE.
48. RICHMOND (SURREY).
49. DUNFERMLINE.
50. TAUNTON.
51. BURY ST. EDMUNDS.
52. WALLASEY.
53. RAMSGATE.
54. HYDE.
55. NEWRY.
56. BRIDGWATER.
57. LEEK.
58. WARWICK.
59. PEMBERTON.
60. OSSETT-CUM-GAWTHORPE.
61. BISHOP AUCKLAND.
62. RUGBY.
63. ELY.
64. NEWPORT (ISLE OF WIGHT).
65. ULVERSTONE.
66. ABERYSTWYTH.
67. DEVIZES.
68. ENNISKILLEN.
69. LLANGOLLEN.

Statistics of Water Undertakings under the Management of Local Authorities.

Name of Town.	Population by last Census.	Corporation, Local Board of Health, or Improvement Commissioners.	Chairman of Water Committee.	Source of Supply—from a River, Drainage Area, or from Wells.	Nature of Supply—Pumping or Gravitation.	Number of Houses Supplied.	Average Daily Supply in Gallons.	Undertaking established or acquired compulsorily, o Terms agreed, or by Arbitration.
Manchester	1,000,000 (of area supplied)	Corporation	John Grave (*Alderman*)	Drainage area and the River Etherow	Gravitation	200,000	Between 17 and 18 millions	Undertaking of old Water Works Company purchased by agreement, and works largely extended since by Corporation
Glasgow	750,000 (in town and suburbs)	Corporation	The Right Hon. the Lord Provost	Loch Katrine in Perthshire	Gravitation	184,500	37,636,265	By agreement in 1855
Birmingham	481,000 (with large additional district)	Corporation	Thos. Avery (*Alderman*)	Rivers, drainage area, and deep wells in the new red sandstone	Pumping	70,000	10,000,000	Compulsory powers were obtained, but in anticipation of an arbitration terms were mutually settled in 1876

MANCHESTER.—The City of Manchester is now supplied by the Longdendale Works. These works are computed to be equal to a supply of 25,000,000 gallons per day. Commenced in 1847, they have been lately completed, and their cost is stated at £2,316,852. The water actually supplied to Manchester is between 17 and 18 million gallons per day, Stockport taking about 1½ millions, so that with an area computed to have a population of one million inhabitants the limit of the present supply is not altogether remote. The Thirlmere scheme, prepared by Mr. Bateman and accepted by the House of Commons in 1879, is designed to meet the further requirements of the city. It is a scheme of the most admirable conception, and is intended to draw from the Thirlmere Lake, in Cumberland, a supply the limit of which is only 50 million gallons per day. "This is to be effected by a composite aqueduct of 102 miles in length, partly consisting of 14 miles of tunnels, partly of 39 miles of a 'cut and cover' channel in the ground; and partly, in the case of valleys and rivers, by 33 miles of cast-iron syphon pipes, or, in a few cases, by bridges."—(*Vide* Parliamentary Report.)

Manchester receives a prior right to 25 gallons of water per head of the population as it increases, from all its sources of supply; but, subject to this prior use, all corporations, urban and rural sanitary authorities, throughout the line of conduits are entitled to require a supply not exceeding 25 gallons per head of the population then existing. The towns on the route will be Preston, Kendal, Wigan, Bolton, Leigh, Hindley, and others. Such are the chief

Statistics of Water Undertakings under the Management of Local Authorities.

Amount paid by Local Authority.	Amount of Capital now engaged in the Undertaking.	Net Profit on Working for the Year.			Public or Special Rate levied in support of Undertaking.	Domestic Rate, Scale on Rental or Rateable Value.	Name of Engineer in charge of Works.
		Paid to Redemption Fund.	Paid to Boro' Fund or Relief of Rates.	Paid to Reserve, Contingency Fund, or Balance.			
£533,561 8*s.* 2½*d.*	£2,898,394 15*s.* 4*d.*	£ *s.* *d.* 36,475 15 7	£ *s.* *d.* No profit allowed, but an estimate prepared every year	£ *s.* *d.* 3,487 1 3	3*d.* in the £ upon the Poor Rate Assessment.	9*d.* in the £ upon the Poor Rate Assessment; without the City, 1*s.* in the £ on the Rack Rent	J. F. Bateman, *M. Inst. C.E.*, *Constructive Engineer.* T. H. G. Berrey, *Assoc. Inst. C.E.*, *Superintendent.*
		£39,962 16*s.* 10*d.* 31st December, 1879					
4½ p.c. Annuities on £303,700 6 p.c. Annuities on £221,680 Loans at 4 p.c. £102,479	£2,057,247	15,096 2 2	None	—	1*d.* per £ on Rental	8*d.* per £ on Rental within City, 11*d.* per £ beyond City	James M. Gale, *M. Inst. C.E.*
		£14,850 0*s.* 6*d.* 1878–79					
Annuities £54,491 on a Capital at 8 & 7 p.c. = £672,000	Capitalized Annuities £1,347,541 Loan and Interest £351,290	—	—	*10,702 10 7	None	On Annual Value in accordance with the scale of the late Co.	John W. Gray, *M. Inst. C.E.*
		£10,702 10*s.* 7*d.* 31st December, 1879					
		* It is the practice of the Water Committee to pay these amounts to the credit of the Reserve Fund, which now stands at £29,215 7*s.* 3*d.*					

features of certainly the greatest water scheme that has ever been devised. The cost of the old company's works, £533,561 8*s.* 2½*d.*; the cost of the new works, Longdendale, £2,316,852 13*s.* 2½*d.*; and the amount already expended to 31st December, 1879, in carrying out the preliminaries of the Thirlmere scheme, £217,837 14*s.* 10*d.*, represent a total of £3,068,251 16*s.* 3*d.*, which affords some idea of the magnitude of the undertaking committed to the care of Mr. Berrey.

BIRMINGHAM.—The Parliamentary limits of the late company included the parishes of Birmingham, Edgbaston, Aston, King's Norton, Yardley, Handsworth, Northfield, and that part of Harborne not included in the hamlet of Smethwick, with a total authorized capital, share and mortgage, of £945,000. The rivers and tributaries over which the late company, and now the corporation, have control are the Tame, Blythe, and Bourne rivers, and Plant's, Perry, and Witton brooks. In addition to these sources water is derived from deep wells at Aston, King's Vale, Perry, Witton, and Selly. The supply thus yielded is collected and stored in 11 reservoirs, having an area of 85 acres, and capable of holding 197 million gallons of water. The general scheme of collection and distribution is the gathering of the water into the various reservoirs at Whitacre, Perry, Witton, and Plant's Brook, from whence it flows by gravitation into the Aston reservoirs, at a considerably lower level. The Aston reservoirs are about 297 feet above the sea level; but the district to be supplied is

Statistics of Water Undertakings under the Management of Local Authorities.

Name of Town.	Population by last Census.	Corporation, Local Board of Health, or Improvement Commissioners.	Chairman of Water Committee.	Source of Supply—from a River, Drainage Area, or from Wells.	Nature of Supply—Pumping or Gravitation.	Number of Houses Supplied.	Average Daily Supply in Gallons.	Undertaking established or acquired compulsorily, on Terms agreed, or by Arbitration.
Leeds	259,212	Corporation	—	River Washburn, tributary of the Wharfe, and drainage area	Gravitation	72,026	7,000,000	Old undertaking of the Leeds Water Works Company acquired under the powers of the Leeds Water Works Act, 1852
Edinburgh, Leith, and Portobello	246,750	Edinburgh District Water Trust Trustees	The Right Hon. the Lord Provost	Springs and drainage area	Gravitation	55,000	37·37 galls. per head to an estimated population of 304,000	Acquired compulsorily by Act of Parliament, price paid by agreement scheduled in Act of 1869.

still higher, and the water has, consequently, to be pumped up from Aston to the Monument Lane reservoir, 532 feet above the sea level, and finally to the Hagley Road reservoir, 602 feet above sea level. From these reservoirs the water is delivered by gravitation over part of the district, the rest being supplied from the mains through which the water is pumped up from Aston. The works were reputed in 1876 to be capable of affording a daily supply of 17,300,000 gallons—namely, 9,800,000 from wells, and 7,500,000 from streams; but in consequence of there not being duplicate pumping machinery at all of the stations, and no engine then at Selby Oak, the largest amount then available for distribution did not exceed 8,800,000 gallons per day. For the above interesting particulars I am largely indebted to an excellent account of the undertaking which appeared originally in the *Birmingham Daily Post*. The latter quantity was then estimated by Mr. Easton, M.Inst.C.E., to be more than sufficient for the supply of the population then served by the company, which required eight million gallons daily; whilst the former amount—*i.e.*, 17,300,000—is more than sufficient to supply the whole population of the districts comprised within the limits of the Act—say, 481,000 at 30 gallons per head, or about 14½ millions daily.

With this view the water committee have, since the transfer, been steadily developing the undertaking, so as to meet the increased supply; and the amount of capital on account of extension of works already expended in the years 1876, 1877, 1878, and 1879, amounts to the sum of £171,655. The present supply is estimated equal to 10 millions per day.

LEEDS.—Mr. Morant, M.Inst.C.E., in the course of his address to the municipal and sanitary engineers and surveyors at Leeds in May 1880, furnishes the following interesting particulars in relation to the water supply:—Leeds possesses an abundant supply of good wholesome water. The present consumption is at the rate of about 7 millions of gallons per day, of which nearly 2 millions are supplied for trade purposes, and the remaining 5 millions consumed for domestic purposes. . . . . The source from which the water is procured is the River Washburn, a tributary of the Wharfe, and the point where the water is first impounded is about 15 miles from the Town Hall, measured in a straight line. In the valley are three large reservoirs for the storage of water for the town's use and compensation for the mills. The drainage area from which these reservoirs are fed is about 22,000 acres, and

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		Paid to Redemption Fund.	Paid to Boro' Fund or Relief of Rates.	Paid to Reserve, Contingency Fund, or Balance.			
		£ s. d.	£ s. d.	£ s. d.			
—	£1,343,634	—	—	—	—	1s. in the £ up to £20, not exceeding £50, 40s.	E. Fillitei *M. Inst. C.E* A. W. Morant, *M. Inst. C.E.* *Borough Engineer*
6 p.c. on £414,000 and a debt of £133,000 taken over	£414,000 at 6 p.c. Mortgage debt £697,200	6,074 0 4	No profit allowed	—	1*d.* per £ on Gross Rental of all property	6½*d.* in the £	James Leslie, *M. Inst. C.E* Alexandei Leslie, *M. Inst. C.E*
		£2,148 4*s.* 11*d.* 15th May, 1879					

the average rainfall is about 36 inches per annum. The most distant reservoir, known as the Fewston reservoir, has an area of water surface of 156 acres, and a capacity of 866 millions of gallons. Swinsty reservoir, the next below, has also 156 acres of water surface, but a capacity of 961 million gallons. The third on the line of the valley is Lindley Wood reservoir, with a water surface of 117 acres, and a capacity of 749 million gallons. Swinsty reservoir is about 450 feet above sea level, and the water is conducted from it by two lines of 30-inch pipes, each about 12 miles in length, to the last storage reservoir at Eccup. The filter beds, seven in number, are situated at Westwood, about three miles from the Eccup reservoir, and the water is conveyed to them in a conduit partly in tunnel under Blackmoor, and partly by 40-inch pipes. Here the whole of the water supplied to the town is filtered. The greater quantity gravitates to the town, and is distributed through three main pipes, one of 30 inches diameter, and two each of 18 inches diameter; and the remainder flows to the well of the pumping station at Headingley, from whence it is pumped to the high-service reservoirs at Moortown and Bramley.

EDINBURGH.—The City of Edinburgh was previously supplied with water from the Pentland Hills. By the Act of 1869 the supply was vested in a body of trustees—the Edinburgh and District Water Trust—and an agreement for the transfer of the undertaking of the water company was scheduled in this Act. It was also proposed to supplement the water supply by what has been described as the St. Mary Loch's scheme; but, owing to some technical objections, this part of the Bill fell through. In 1871 this scheme was, however, revived and passed through the Commons. The scheme was computed to cost £480,000, and would have raised an actual supply of 28 gallons per head of population per diem to 123 gallons. The opposition of the ratepayers, however, secured its defeat in the Lords, the Committee stating that they could not sanction so large an expenditure of money which did not appear to be required then.

In 1874 the trustees went to Parliament again to promote the Moorfoot scheme. This was computed equal to a supply of 15 million gallons per day, or 60 gallons per head of population. This scheme had also the approval of Mr. Hawkesley. The cost was put at £325,000, and it was eventually sanctioned by Parliament, and has been carried out by Mr.

Statistics of Water Undertakings under the Management of Local Authorities.

Name of Town.	Population by last Census.	Corporation, Local Board of Health, or Improvement Commissioners.	Chairman of Water Committee.	Source of Supply—from a River, Drainage Area, or from Wells.	Nature of Supply—Pumping or Gravitation.	Number of Houses Supplied.	Average Daily Supply in Gallons.	Undertaking established or acquired compulsorily, on Terms agreed, or by Arbitration.
Bradford	145,827	Corporation	W. Brayshaw (*Alderman*)	Springs and drainage area	Gravitation	—	8,750,000	Old undertaking acquired on terms agreed in 1854
Belfast	174,412 (now not less than 230,000)	Corporation of Belfast Water Commissioners	Thos. Gaffikin	Drainage area	Gravitation	38,000	5,000,000 (will shortly be increased to 8,000,000 per day)	Commissioners incorporated by Belfast Water Act, 1840, powers extended by Acts of 1865, 1874, and 1879
Bolton	93,853	Corporation	T. L. Rushton (*Alderman*)	Drainage area	Gravitation	36,000	5 millions	From Bolton Water Works Co. Sept. 1847
Nottingham	181,000 (actual)	Corporation	Sir Jas. Oldknow	Wells	Pumping	38,700	3,400,000	Terms agreed 1879-80
Kingston-upon-Hull	123,408 (estimated at present 150,000)	Corporation	S. Woodhouse (*Alderman*)	Wells, borings in chalk strata	Pumping	30,000	5 millions	Originally established by Corporation

Leslie. The Moorfoot works are not yet completed, but the water is introduced; two reservoirs are still to be completed. The Committee on this Bill expressed pointedly their opinion that the opposition which was offered to the Bill of 1871 had resulted in a saving to the ratepayers of a large sum of money by substituting the Moorfoot scheme for the St. Mary Loch scheme. The assessment is calculated so as to pay the 6 per cent. annuities, the interest on £697,200, a sinking fund of 1 per cent. on debt and working expenses. There is no profit contemplated, the assessment being merely intended to meet the above expenses. In the year referred to the revenue was £58,395 8*s.* 11*d.*, amounting, with a balance of previous years, to £60,927 9*s.* 4*d.* The expenditure, not including the sinking fund, was £58,779 4*s.* 5*d.*

Mr. W. H. Cameron, who for many years had occupied an honourable and influential position under the company, continues to fill the responsible office of treasurer to this great undertaking under the present trust.

Statistics of Water Undertakings under the Management of Local Authorities.

Amount paid by Local Authority.	Amount of Capital now engaged in the Undertaking.	Net Profit on Working for the Year.			Public or Special Rate levied in support of Undertaking.	Domestic Rate, Scale on Rental or Rateable Value.	Name of Engineer in charge of Works.
		Paid to Redemption Fund.	Paid to Boro' Fund or Relief of Rates.	Paid to Reserve, Contingency Fund, or Balance.			
		£ s. d.	£ s. d.	£ s. d.			
£191,816	£1,641,971	7,500 0 0	Nil	—	None	On Rental	A. R. Binnie, *M. Inst. C.E.*
		£7,500. 1880					
—	£386,438	2,870 0 0	—	—	2*d.* per £ on Government Tenement Valuation (Fire Rate)	8*d.* per £ on Government Tenement Valuation	Luke L. Macassey, *Assoc. Mem. Inst. C.E.*
		Deficiency £3,264 3*s.* 8*d.* 31st Oct., 1879					
Old Water Works Capital Account, Sept. 1847, £141,928 6*s.* 8*d.* Rent-charge £4,500, redeemable at 25 years' purchase	£642,732 9*s.* 9*d.*	2,304 5 11	3,000 0 0	—	None	Gross rateable value	J. Jackson
		£7,169 6*s.* 0½*d.* 30th June, 1879					
Annuities 6¼ p.c. (1881) 6¾ p.c. (1882) 7 p.c. (1883) and £30,000 Bonus	£399,960 (5 p.c.) Loans £32,050 (Company)	—	—	—	None	5½ to 3 p.c. per annum on gross rental	M. O. Tarbotton, *M. Inst. C.E.*
—	£217,114	3,600 0 0	1,272 18 4	—	None	5 p.c. on rental, trade by meter 6*d.* and 9*d.* per 1,000 gals.	D. Maxwell
		£4,124 4*s.* 11*d.* (½-year). 25th Mar., 1879					

BELFAST.—For fire purposes, buildings not being dwelling-houses are assessed at one-fourth of the domestic rate. The balance of revenue for the year ending October 31st, 1879, is £10,776 15*s.* 6*d.*; from this deducting the amount due for interest paid on mortgages—£11,170 19*s.* 2*d.*—leaves upon adjustment a small deficiency, *i.e.*, £394 3*s.* 8*d.* It is, however, correct to supplement this by a statement of the commissioners' balances from income on the 31st October, 1878—£10,874 17*s.* 6*d.*; and on the 31st October, 1879, £6,206 17*s.* 5*d.* The Belfast Water Commissioners' accounts for the year 1879 show in addition that £2,870 has been paid on sinking fund account, an annuity of £800 to the Belfast Charitable Society, and a rent-charge of £400 to the Marquis of Donegal.

BOLTON.—The works have been almost entirely constructed by the corporation.

NOTTINGHAM.—The undertaking passed into the hands of the corporation on the 25th March, 1880. The corporation paid to the company a bonus of £20,000, and a further

Statistics of Water Undertakings under the Management of Local Authorities.

Name of Town.	Population by last Census.	Corporation, Local Board of Health, or Improvement Commissioners.	Chairman of Water Committee.	Source of Supply—from a River, Drainage Area, or from Wells.	Nature of Supply—Pumping or Gravitation.	Number of Houses Supplied.	Average daily Supply in Gallons.	Undertaking established or acquired compulsorily, on Terms agreed or by Arbitration.
Dundee	175,000 (actual district of supply)	Corporation	Provost Brownlee	Rivers and Drainage area	Gravitation	—	5¾ millions	By Act of Parliament from Water Co. in 1869
Brighton District	92,470 15,320 107,790	Corporation	E. J. Reeves (*Alderman*)	Wells sunk into the chalk	Pumped into Reservoirs, thence by gravitation	24,000	Between 2 and 3 millions	On terms agreed in 1872
Leicester	95,084 (now estimated at 125,000)	Corporation	Alfred Paget, J.P. (*Alderman*)	Drainage area 7,260 acres	Pumping from one Reservoir, gravitation from the other	23,484	2½ millions	By agreement in 1878
Aberdeen	88,125	Town Council (Police Department)	G. Donald (*Baillie*)	River Dee	Gravitation	—	4½ millions	Never belonged to any Company new works constructed under the Acts of 1862 and 1867

sum of £10,000 in lieu of the company retaining any cash balances in hand at the time of the transfer. Out of these sums the company have had to provide all compensations payable to directors, officials, and others. Each shareholder is entitled to receive from the profits of the water undertaking, from the borough fund, or from the general district rates, an annuity for the year ending March 25th, 1881, after the rate of 6½ per cent. for the year ending March 25th, 1882, after the rate of 6¾ per cent., and for the year ending March 25th, 1883, after the rate of 7 per cent., and in perpetuity at the latter rate on the capital invested.

DUNDEE.—The Dundee Corporation acquired in 1869-70 from the Dundee Water Company what is known as the "Monikie" Water Works, for which the corporation gave capitalized value of annuities, mortgage debts of water company, and other expenses £380,687 2*s*. These works were no sooner bought than they were found inadequate to supply Dundee and district, the result being a new Bill in 1871 to acquire the Loch of Lintrathen and construct entirely new works, which has been done upon an outlay of £325,622. The Lintrathen Works have been supplying Dundee almost wholly since 1876. The "Monikie" reservoirs, four in number, with the aqueduct and line of pipes therefrom to Dundee, have, since the introduction of Lintrathen water by a different route been practically unused, so that in reality, so far as revenue is concerned, the Lintrathen source of supply is the producer; while, on the other hand, the old works at present do not yield any revenue, inasmuch as no water is required from that district. So soon as the full carrying power of the main pipe (27 inches diameter) from Lintrathen is reached, then the corporation will fall back on the "Monikie" supply. The undertaking is splendidly managed, the trifling deficiency above being purely accidental; in fact, far from showing deficiencies, the water

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ount paid by Local Authority.	Amount of Capital now engaged in the Undertaking.	Net Profit on Working for the Year.			Public or Special Rate levied in support of Undertaking.	Domestic Rate, Scale on Rental or Rateable Value.	Name of Engineer in charge of Works.
		Paid to Redemption Fund.	Paid to Boro' Fund or Relief of Rates.	Paid to Reserve, Contingency Fund, or Balance.			
		£ s. d.	£ s. d.	£ s. d.			
petual Annuities he Shareholders ,315 at 23 years' hase = £329,245 t. Debts Co. . . 43,579 372,824	£743,122 7s.	None	—	—	1d. per £ on rental	Rate 1s. 1d. per £ on rental, meter rate 7d. per 1,000 gals.	J. Watson
		£1,218 2s. 4d. (deficiency). 15th May, 1879					
337,577 4s. 9d. cluding special ct and cost of Transfer)	£418,866 11s. 1d.	1,207 11 2	4,000 0 0 (1880)	876 9 2	None	9d. in the £ on the rateable value	E. Easton, *M.Inst. C.E., Consulting Engineer*
		£6,084 0s. 4d. 1879					
.c. on £230,000, shares being converted into 4 p.c. ck at the rate of 13 15s. for each £25 Share = £402,500	£472,184	1,573 5 2	—	1,392 14 11	None	Rental value of premises	F. Griffiths, *Assoc.M. Inst.C.E.*
		£3,178 3s. 10d. 31st December, 1879					
—	£162,132 10s.	1,665 19 8	—	708 1 6½	2d. in the £	5d. in the £, meter supply 8¼d. to 5¼d. per 1,000 gals.	Wm. Boulton, *Assoc.M. Inst.C.E.*
		£2,374 1s. 2½d. 30th September, 1879					

undertaking ever since it has been in the hands of the corporation has realized surplus profits, while the domestic rate in 1869—1s. 6d.—has been reduced to as low as 1s. 1d., and has only lately been raised to 1s. 4d.

BRIGHTON.—The actual purchase-money paid to the Brighton, Hove, and Preston Water Works Company amounted to £321,156 11s. 8d., or at the rate of £160 for every £100 of paid-up capital. The company paid at this time 7 per cent. on a share capital slightly in excess of £200,000, but limited to 8 per cent. There was in addition a mortgage of £27,000 taken over by the corporation. The transaction therefore stands for about 23 years' purchase of the dividends paid by the company, although it should be borne in remembrance that for two years previous to the transfer the company were in a position to have divided full dividends, *i.e.*, 8 per cent. on their share capital, which entitles the Brighton Corporation to even greater credit for securing such good terms.

LEICESTER.—Under the Company's Act the corporation received *one-half* of the surplus profits beyond 4½ per cent. on £80,000. They received £2,463 2s. 5d. for their share in the year 1877, the company paying their own shareholders at the rate of 5¾ and 6 per cent.

ABERDEEN.—The total sum expended on new water works construction account, excluding the reduction by sinking fund, amounted at 30th September, 1879, to £167,488 6s. 1½d.; the borrowing powers under the Acts of 1862 and 1867 amount to £170,000. The town council do not make any profits from the works, the charges being fixed so as to nearly meet the expenses.

Statistics of Water Undertakings under the Management of Local Authorities.

Name of Town.	Population by last Census.	Corporation, Local Board of Health, or Improvement Commissioners.	Chairman of Water Committee.	Source of Supply—from a River, Drainage Area, or from Wells.	Nature of Supply—Pumping or Gravitation.	Number of Houses Supplied.	Average Daily Supply in Gallons.	Und estat ac compu Term c Arbi
Ashton-under-Lyne, Stalybridge, Dukinfield, Mossley, & Hurst	100,000 (about)	Joint Committee	Ely Andrew, J.P. (Ashton-under-Lyne)	Drainage area	Gravitation	23,588	1,900,000	Esta by th ratio Loca in for ve joint taking Join mitt carry the G Ext Sc
Oldham	115,000	Corporation	J. Wild (*Alderman*)	Drainage area	Gravitation	33,000	3,000,000 (25 gals. per head of population)	On agre 18
Stockton and Middlesbro'	35,794 39,284 75,078	Corporation	T. Hugh Bell (*Alderman*)	River Tees	Pumping	25,000	7,000,000	Arbi under sory p the C tions Act,

ASHTON-UNDER-LYNE.—The precedent of the united undertakings of the Ashton-under-Lyne and Stalybridge Corporations and the Dukinfield, Mossley, and Hurst Local Boards presents some features worthy of attention. The joint water works committee of these corporations and local boards were not only authorized to carry out the Greenfield scheme, but had also to take over the works already possessed by the three first-named authorities, and the contention arose as to the price at which these old works should be transferred to the joint committee. The existing works of the Ashton Corporation, the Stalybridge Corporation, and the Dukinfield Local Board were, in fact, to be sold to the joint committee for as much as they would fetch, and the total cost was to be contributed by the various bodies represented on the joint committee in the following proportions :—Ashton 259 parts, Stalybridge 185 parts, Dukinfield 111 parts, Mossley 75 parts, and Hurst 45 parts ; it being, of course, understood that, if the value of the plant belonging to any of these authorities should exceed the amount of its contribution to the total cost, it would have something to receive, instead of having something to pay. This led to an arbitration, concluded in February 1880, the cost of which appears to have amounted to the large sum of £22,397 2*s.* 4*d.* The result determined by the arbitration was that the value of the three undertakings should be taken at £332,159, in which Ashton is valued at £173,679, Stalybridge £124,196, and Dukinfield £34,287. Now, the amount of capital raised by the joint committee by calls upon the contributory districts for the Greenfield extensions to the 25th March, 1880, is already £236,397, and the £332,159 fixed as the value of the original undertakings referred to in the

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		Paid to Redemption Fund.	Paid to Boro' Fund or Relief of Rates.	Paid to Reserve, Contingency Fund, or Balance.			
uation of Ashton, talybridge, and ıkinfield under-kings £332,159	£236,397 2*s.* 4*d.* (Greenfield Extension)	£ *s.* *d.* —	£ *s.* *d.* —	£ *s.* *d.* —	N one	Rental £ *s.* *d.* under £6, 0 6 0 not exc'd'g 10, 0 9 0 15, 0 17 6 20, 1 2 6 50, 2 10 0 75, 3 2 6 100, 3 10 0 meter supply 1*s.* to 6*d.* per 1,000 gals.	Messrs. Bateman, Hill, and Bateman, *MM.Inst. C.E.* W. H. Rothwell, *Secretary*
		£11,575 19*s.* 1*d.* (income). Nine months, 25th March, 1880					
£ *s.* *d.* 123,000 0 0	567,000	3,646 0 0	None	—	None	6½ per cent. on rack rental	Wm. Watts
		£9,199 0*s.* 4*d.* Nine months, 25th March, 1879					
301,114 2 6	869,543	Not yet commenced	Nil	—	Stockton nil, Middlesbro' 1*s.* 2*d.* in the £	7½ to 5 p.c. on rateable value, Meter supply 3*d.* per 1,000 gals.	James Mansergh, *M. Inst. C.E.*, *Consulting Engineer*
		Nil. 13th August, 1879					

award is additional capital, and the amount required to be paid by virtue of it is now being raised by the joint committee by calls made upon those contributory districts who are liable to pay, and the excess will be refunded to those districts entitled to it by reason of their having separate undertakings valued at more than their proportionate share of capital and now merged in the new scheme.

In like manner the income from water rents, after deduction of working expenses, is paid over by the joint committee to the contributory corporations and local boards in the proportion mentioned in the Act of 1870. It will be noticed that, although the whole property is vested in the committee by the Act, and they make calls upon the contributory districts for the capital required, and pay over the income in the way mentioned, the joint committee have nothing to do with loans, interest, or sinking fund, as the contributory districts deal with these things themselves.

STOCKTON AND MIDDLESBROUGH.—These water works were purchased by the two corporations, and supply a district of much greater area than the two boroughs. They are managed by a joint board of twelve, six appointed by each corporation. The board has no power to borrow money, but issues its "precepts" to the corporations for the amounts from time to time required, either for acquiring the works or for extensions. Each corporation borrows one-half of the amounts so required and the sums so borrowed, together with the interest and redemption of principal, are a charge on the borough funds of the two corporations.

Statistics of Water Undertakings under the Management of Local Authorities.

Name of Town.	Population by last Census.	Corporation, Local Board of Health, or Improvement Commissioners.	Chairman of Water Committee.	Source of Supply—from a River, Drainage Area, or from Wells.	Nature of Supply—Pumping or Gravitation.	Number of Houses Supplied.	Average daily Supply in Gallons.	Undertaking established or acquired compulsorily, on Terms agreed, or by Arbitration.
Huddersfield	70,253	Corporation	W. Mellor (*Alderman*)	Springs and gathering grounds	Gravitation	19,763	2,000,000	Acquired by the Corporation from the Commissioners of the Huddersfield Water Works in 1869
Wolverhampton	68,291	Corporation	J. G. Wright	River and wells	Pumping	18,362	2,312,513	On terms agreed in 1868

The water board pays over to each corporation from time to time (mostly half-yearly) one-half of the difference between the water rents and the working expenses; out of which, if sufficient, the corporations pay the interest, and if not sufficient to pay this interest, the difference has to be made good out of the borough funds. For the year ending 13th August, 1879, the rents were £42,801 17*s.* 7*d.*, the working expenses £11,815 16*s.* 9*d.*, and the amount handed over to the corporations £23,000. To meet the charges for interest Middlesbrough levied an extra borough rate, but Stockton, having for the moment other funds available, did not do so.

HUDDERSFIELD.—New works have since been constructed by Mr. Hawkesley and Mr. G. Crowther. These comprise important reservoirs at Blackmoor Foot, at Deerhill, and the Wessenden Valley. These water works are now equal to an extended supply of four million gallons per day.

WOLVERHAMPTON.—Mr. Lyons Wright, the engineer of the Wolverhampton Corporation Water Works, has prepared some statistics of the water supply of Wolverhampton which are very instructive, and which afford some idea of the care and judgment which has attended the management of the undertaking since 1868. From these we learn that the net earnings increased from £8,456 9*s.* 11*d.* in 1868 to £11,206 8*s.* 4*d.* in 1879. A very important factor, the percentage of working expenses to gross receipts, has within this period alternated

Statistics of Water Undertakings under the Management of Local Authorities.

ount paid by Local Authority.	Amount of Capital now engaged in the Undertaking.	Net Profit on Working for the Year.			Public or Special Rate levied in support of Undertaking.	Domestic Rate, Scale on Rental or Rateable Value.	Name of Engineer in charge of Works.
		Paid to Redemption Fund.	Paid to Boro' Fund or Relief of Rates.	Paid to Reserve, Contingency Fund, or Balance.			
£ s. d. 58,663 14 2 (valuation)	£ 748,201	£ s. d. None	£ s. d. None	£ s. d. —	—	Rent-al. Water Charge. £ £ s. d. 5, 0 7 6 10, 0 15 0 20, 1 10 0 30, 2 2 0 50, 3 5 0 100, 5 9 0 Beyond } 5 p. c. Meter supply 6*d.* per 1,000 gals.	J. B. Abbey, *Assoc. M. Inst. C.E.*
		£5,531 (deficiency). 31st August, 1879					
: late Company's ital comprised— g. Sh. £100,000 c. Pref. 24,415). 4 p. c. 86,246 210,661 :r cent. Annuities . Share Capital	232,355	—	—	1,850 18 8	None	Poor-rate assesst. Water Rate. £ £ s. 8, 0 10 10, 0 13 20, 1 5 50, 3 2 75, 4 14 100, 6 8 150, 9 8 Witht. Boro.' } 7 p.c. on rntl. Meter supply, 1*s.* 4*d.* to 6*d.* per 1,000 gals.	Lyons Wright
		£1,850 18*s.* 8*d.* 1879					

from 36·2 per cent. to 46·9 per cent.; last year (1879) the proportion amounted to 44·3 per cent. The quantity of coal consumed by the pumping engines per million gallons of water pumped has varied between 4 tons 11 cwt. 3 qrs. and 4 tons 3 cwt. 2 qrs.; these rates prevailing in the years 1872-1878. The bulk of the water has, however, to be pumped twice, viz., from Cosford to Tettenhall and from Tettenhall to Goldthorn Hill, before it is distributed, so that the actual consumption of coal in proportion to the water consumed and paid for in the years 1872-1878 should be corrected to 8 tons 7 cwt. 2 qrs. and 7 tons 16 cwt. respectively per million gallons.

There are also statistics of the gross cost of each million gallons distributed over six years. From these I quote the extremes :—

	1873.	1879.
Coal	£5 15 5	£3 9 0
Engine Expenses	5 3 11	3 5 11
Interest	14 15 0	10 13 5
General Expenses	4 11 0	3 18 11
	£27 5 4	21 7 3

Mr. Wright states that in the Borough of Wolverhampton there are 15,145 houses, of which 12,047 are supplied with water from the corporation water works. There are there-

Statistics of Water Undertakings under the Management of Local Authorities.

Name of Town.	Population by last Census.	Corporation, Local Board of Health, or Improvement Commissioners.	Chairman of Water Committee.	Source of Supply—from a River, Drainage Area, or from Wells.	Nature of Supply—Pumping or Gravitation.	Number of Houses Supplied.	Average Daily Supply in Gallons.	Undertakin established acquired compulsorily, Terms agree or by Arbitration
Halifax	65,510	Corporation	J. W. Longbottom (*Alderman*)	Drainage area	Gravitation	17,400 (in the Borough)	3,700,000	Acquired i 1848
Cardiff (District)	60,223	Corporation	D. Jones, J.P. (*Alderman*)	All	Both	12,000	2,000,000	On terms agreed 24th Dec. 1879
Greenock	60,000	Water Trust	D. Campbell (*Provost*)	Drainage area	Gravitation	13,600	6,000,000 Town Supply. 11,000,000 Water Power	On terms agreed in 18
Southampton	53,741 (now estimated 59,600)	Urban Sanitary Authority	W.H. Rogers, J.P.	River Itchin	Pumping	11,400	3,000,000 (including trade purposes)	Establishe by the Corporati

fore 3,098 houses in the borough the inhabitants of which are still dependent upon the wells for their supply.

The total quantity of water consumed in the entire district during the year ending 30th Sept., 1879, has been 844,067,400 gallons, showing an increase of 101,457,800 gallons as compared with the previous year. This quantity shows a daily average of 2,312,513. The township of Bilston consumed 96,532,050 gallons, or a daily average of 264,471 gallons, being 44,471 gallons per day over the minimum quantity contracted for. The quantity of water pumped for consumption, after deducting water supplied to Bilston and to consumers for trade purposes, shows a daily average per head of customers supplied of 19½ gallons, against 17 gallons the previous year.

Statistics of Water Undertakings under the Management of Local Authorities.

nt paid by Local Authority.	Amount of Capital now engaged in the Undertaking.	Net Profit on Working for the Year.			Public or Special Rate levied in support of Undertaking.	Domestic Rate, Scale on Rental or Rateable Value.	Name of Engineer in Charge of Works.
		Paid to Redemption Fund.	Paid to Boro' Fund or Relief of Rates.	Paid to Reserve, Contingency Fund, or Balance.			
	£ s. d.	£ s. d.	£ s. d.	£ s. d.			
£30,000	650,000 0 0	Nil	Nil	—	10*d.* in the £	Rack rents £ s. d. under 5, 6 6 10, 13 0 15-20, 20 0 40-50, 40 0 75, 60 0 £4 per cent. from £100	James A. Paskin, *M. Inst. C.E.*
		No profit. 1879					
,000 upon the Company's al. Dividend 00 at 12 p.c. 00 at 7½ p.c. 31 at 7½ p.c. 31 = 11,147 6 6*d* ' years' purchase	320,000 0 0	—	—	—	None	5 and 6 p.c. on annual value	Hy. Gooch, *M. Inst. C.E.*
		(Gross) £11,652 10*s.* 3*d.* 30th June, 1879 (Cardiff Water Company.)					
£175,000	394,784 18 4	1,750 0 0	Nil	—	1½*d.* per £	8*d.* per £	Jas. Wilson
		£1,966 4*s.* 4*d.* 26th May, 1880					
—	75,527 4 3 *i.e.* Balance owing upon loans	2,887 6 6	No profit made	—	£6,347 thro' General District Rate	3*d.* in the £ on all properties supplied with water for domestic purposes	G. Manwaring
		31st August, 1879					

SOUTHAMPTON.—The receipts for water supplied by meter, 6*d.* per 1,000 gallons, &c., £2,072, together with a 3*d.* rate, £1,889 9*s.* 11*d.*, cover the working expenses, about £3,961 9*s.* 11*d.* per annum. The amount borrowed up to and inclusive of the 31st August, 1879, for permanent works is £123,999 16*s.* 7*d.*, which incurs, for redemption of capital, annually £2,887 6*s.* 6*d.*, and for interest on loans £3,459 14*s.* 5*d.* This amount, £6,347 0*s.* 11*d.*, is charged on the general district rate, so that, if a *penny* in the £ produces gross £824, the entire cost only averages 10*d.* in the £.

Statistics of Water Undertakings under the Management of Local Authorities.

Name of Town.	Population by last Census.	Corporation, Local Board of Health, or Improvement Commissioners.	Chairman of Water Committee.	Source of Supply—from a River, Drainage Area, or from Wells.	Nature of Supply—Pumping or Gravitation.	Number of Houses Supplied.	Average Daily Supply in Gallons.	Underta establish acquir compulsori Terms ag or by Arbitrat
Merthyr Tydvil	51,891	Local Board of Health	G. Martin	River Taff Vechan	Gravitation	10,000	1,000,000	Works structed Boar
Paisley, Johnstone, Elderslie, and Linwood	48,240	Town Council, as Paisley Water Commissioners	W. MacKean (*Provost*)	Drainage area	Gravitation	13,613	37 gallons per head of population	By arbitr in 185
Birkenhead & Claughton	45,418	Corporation	H. Rawcliffe, J.P.	Wells in the New Red Sandstone	Pumping	7,934	1,850,000	Under pc of Local of Parlia 1858
Burnley	55,280	Corporation	G. Keighley	Drainage area and wells	Gravitation	12,387	1,229,000	Establis in 184
Bury (Lanc.)	41,000	Corporation	Aldn. Park	Drainage area	Gravitation	17,000	2,500,000	Terms ag

BURNLEY.—The entire outlay on the works amounts to £105,909 6*s.* 8*d.* The accounts, both for the water and the gas undertaking, prepared by Mr. A. S. King, borough accountant, and Mr. Geo. Gill, the borough auditor at Burnley, are presented in a form which, for comprehensiveness and clearness, does its authors infinite credit.

Statistics of Water Undertakings under the Management of Local Authorities.

t paid by Local uthority.	Amount of Capital now engaged in the Undertaking.	Net Profit on Working for the Year. Paid to Redemption Fund.	Paid to Boro' Fund or Relief of Rates.	Paid to Reserve, Contingency Fund, or Balance.	Public or Special Rate levied in support of Undertaking.	Domestic Rate, Scale on Rental or Rateable Value.	Name of Engineer in charge of Works.
—	£ s. d. 120,000 0 0	Interest and Redemption. £ s. d. 6,505 17 7	£ s. d. None	£ s. d. —	£3,909 (deficiency) paid out of General District Rate	5 per cent. per annum on rateable value	S. Harpur, *Assoc. M. Inst. C.E.*
		(Gross) £2,414 13*s.* 4*d.* 25th Mar., 1879					
50,000 at . 4*d.* per cent. er annum	140,116 0 0	750 0 0	No profits made	—	1*d.* per £	8*d.* per £	R. Sharp
		28th May, 1879					
220,000 and Water Works)	340,152 0 0 (Gas and Water Works)	3,557 17 5	—	To Profit and Loss Account 5,665 1 6	None	Max. p.c. 7½ to 5 Less 30 p.c. 2½ ,, 1½ Net 5¼ 3½ per annum. Water rents reduced 30 p.c. since transfer	T. C. Thorburn, *Borough Surveyor*
		£9,222 18*s.* 11*d.* 25th March, 1879 (Gas and Water Accounts.)					
—	77,629 8 4	1,288 0 0	1,093 19 10	—	None	5 per cent. on rental. Meter Supply 8*d.* per 1,000 gallons	J. Emmett
		£2,381 19*s.* 10*d.* 9 months, 25th March, 1880.					
10 per cent.	£250,363	None	None	—	1*d.* in the £	5 to 7½ p.c. on rental	Thomas Rigby
		£2,491 (loss). 1879					

Statistics of Water Undertakings under the Management of Local Authorities.

Name of Town.	Population by last Census.	Corporation, Local Board of Health, or Improvement Commissioners.	Chairman of Water Committee.	Source of Supply—from a River, Drainage Area, or from Wells.	Nature of Supply—Pumping or Gravitation.	Number of Houses Supplied.	Average Daily Supply in Gallons.	Undertaking established or acquired compulsorily, on Terms agreed, or by Arbitration.
Coventry	37,670	Corporation	Hy. Matterson	Artesian wells in the new red sandstone	Pumping	8,750	700,000	Works erected by the Corporation in 1846
Hastings	29,289 (now about 40,000)	Corporation (acting as Urban Sanitary Authority)	W. L. Vernon	Drainage area and from wells	Both	5,476	650,000	Such portions of the undertaking as have been *acquired* have been so on terms agreed
Barrow-in-Furness	40,000 (estimated)	Corporation	J. T. Smith (*Alderman*)	Drainage area	Gravitation	9,300	1,500,000	Gas and Water Works purchased by agreement in 1868 for £82,500
Exeter	38,000 (supplied with water)	Corporation	W. J. Richards (*Alderman*)	River Exe	Pumping by 2 breast water wheels and a steam engine	5,000	1,200,000	On terms agreed in 1878

HASTINGS.—Although the £3,921 2*s.* 10*d.* referred to above is not raised in the form of a water rate, it answers that purpose, and constitutes a portion of the gross receipts, amounting to £10,982. The expenditure for the year on maintenance, &c., is £4,280 19*s.* 7*d.*, leaving gross profits £6,701 0*s.* 5*d.* The interest on capital, including income-tax, is £2,923 19*s.* 1*d.*, leaving the net profit, as shown, £3,777 1*s.* 4*d.*

A considerable portion of the works has been constructed under the provisions of the Public Health Act.

Statistics of Water Undertakings under the Management of Local Authorities.

unt paid by Local Authority.	Amount of Capital now engaged in the Undertaking.	Net Profit on Working for the Year.			Public or Special Rate levied in support of Undertaking.	Domestic Rate, Scale on Rental or Rateable Value.	Name of Engineer in Charge of Works.
		Paid to Redemption Fund.	Paid to Boro' Fund or Relief of Rates.	Paid to Reserve, Contingency Fund, or Balance.			
£33,000	£13,580	£ s. d. 2,753 9 4	£ s. d. —	£ s. d. —	None	Annual Rent not exceeding £5, 4s.; 10, 10s.; 20, 20s.; 60, 40s.; 100, 60s. Beyond, 3 per cent. Meter rate, 6d. to 8d. per 1,000 gallons.	Ed. J. Purnell
		£2,208 17s. 4d. 25th March, 1880					
£98,770	£70,840	2,432 5 7	2,779 17 7	—	None*	8d. in the £ on rateable value. Meter rate 1s. per 1,000 galls.	Wm. Andrews, *Borough Surveyor* Ed. Easton, *M. Inst. C.E., Consulting Engineer*
		£3,777 1s. 4d. 25th March, 1880					
		* Interest and part principal are charged to General District Rate Account., *i.e.*, £3,921 2s. 10d.					
£47,500 ater section)	£176,981 15s. 6d.	2,362 0 0	2,971 7 10	—		5 per cent. per annum on rateable value	Wm. Fergusson
		£5,333 7s. 10d. 1878–79					
:. Annuities on ıpany's Capital ;0,000 at 6 p.c. emable at £47 £25 Share = £94,000	£120,000	Interest and Redemption. 5,206 16 0	—	—	None	5 per cent. on rateable value	H. Percy Boulnois, *M. Inst. C.E., Borough Engineer*
		£5,598 6s. 7d. (gross). 25th May, 1879					

BARROW-IN-FURNESS.—From a population of 12,000 in 1867, Barrow-in-Furness has increased to the extent of 40,000 in 1880. From £43,534, the rateable value of property has likewise increased to £178,133—a remarkable instance of prosperity.

EXETER.—Under the terms of this purchase the shareholders received £94,000 for their undertaking, the bonds and debentures being taken over by the corporation. The

Statistics of Water Undertakings under the Management of Local Authorities.

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Worcester	33,226	Urban Sanitary Authority	J. Wood (*Alderman*)	River Severn	Pumping	7,750	865,000	Constructed under the Public Health Act, 1848, in 1857
Reading	32,324	Corporation (as Urban Sanitary Authority)	C. J. Andrewes (*Alderman*)	River Kennet	Pumping	8,000	1,250,000	By Act of 1868 the Water Works were transferred from the Reading Water Works Company to the Local Board of Health
Gloucester	32,000 (now 38,000)	Corporation	W. V. Ellis, J.P. (*Alderman*)	Drainage areas at Witcombe and Robinswood Hill	Gravitation	6,000	950,000	Partly by Act, by arbitration, and agreement in 1855
Carlisle	31,049	Corporation	R. Forster (*Alderman*)	River Eden	Pumping	6,000	1,058,600	On terms agreed in 1866

company paid 6 per cent., and received 8 per cent. This appears to be more than 30 years' purchase of the dividends. Considerable improvements have already been carried out in the works by Mr. Boulnois, M. Inst. C.E., since the undertaking has been acquired. The gross profit in the first year's working appears to have been £5,598 6*s.* 7*d.* The provision for repayment of principal and interest is £5,206 16*s.* per annum; in fact, unusually favourable terms appear to have been secured for the repayment of the purchase-money in this case, and this, to a considerable extent, must cancel the effect of the high price paid by the corporation for the undertaking.

Statistics of Water Undertakings under the Management of Local Authorities.

unt paid by Local Authority.	Amount of Capital now engaged in the Undertaking.	Net Profit on Working for the Year.			Public or Special Rate levied in support of Undertaking.	Domestic Rate, Scale on Rental or Rateable Value.	Name of Engineer in charge of Works.
		Paid to Redemption Fund.	Paid to Boro' Fund or Relief of Rates.	Paid to Reserve, Contingency Fund, or Balance.			
		£ s. d.	£ s. d.	£ s. d.			
—	£48,000	—	667 0 0	—	About 6*d.* in the £	5*d.* in the £ on the rateable value. Meter rate 5*d.* per 1,000 galls.	S. G. Purchas, *M. Inst. C.E.*
		£667. 1879					
		Annuity, Interest, and Depreciation.					
c. Annuities on mpany's Share ital amounting o £42,000	Annuity Capital £42,000 Company's original Mortgage 14,000 New Capital 30,000 £86,000	5,997 16 10	323 17 6	—	None	Under £15 at 4 p.c. and at £15 and upw'rds at 4½ p.c. on the gross rental. Meter rate 1*s.* 3*d.* to 6*d.* per 1,000 galls.	Albert W. Parry, *Assoc. Inst. C.E.*
		£6,321 14*s.* 8*d.* (gross). 25th Mar., 1879					
£18,500	£61,000	1,026 9 10	687 15 0	—	None	5 per cent. on rental. Meter rate 1*s.* per 1,000 galls.	R. Read, *Assoc. M. Inst. C.E.*, *City Surveyor*
		£1,714 4*s.* 25th March, 1880					
£29,906	£42,046 16*s.* 4*d.* Net value of works, less depreciation at 3 p.c. per annum	1,225 0 0	—	—	None	5 per cent. on rental. Meter rate 10*d.* to 6*d.* per 1,000 gallons	J. Hepworth, *Assoc. M. Inst. C.E.*
		£2,362. 30th June, 1879					

WORCESTER.—The general district rates are liable to pay the interest and principal on the total sum borrowed, and the annual sum to pay off is equal to about 6*d.* in the £.

READING.—The annuity paid per annum is £2,940; the amount carried to the "interest and sinking fund account," £2,640 12*s.* 6*d.*, being a sum equal to £6 5*s.* for every £100 borrowed by the Reading Local Board, including the mortgage, and which also redeems the capital in 30 years. The depreciation fund takes £417 4*s.* 4*d.*

CARLISLE.—The amount of loans authorized were £47,000, of which sum £28,862 is now the balance unredeemed.

Statistics of Water Undertakings under the Management of Local Authorities.

Name of Town.	Population by last Census.	Corporation, Local Board of Health, or Improvement Commissioners.	Chairman of Water Committee.	Source of Supply—from a River, Drainage Area, or from Wells.	Nature of Supply—Pumping or Gravitation.	Number of Houses Supplied.	Average Daily Supply in Gallons.	Undertaking established or acquired compulsorily, on Terms agreed, or by Arbitration.
Lincoln	26,776	Corporation	F. J. Clarke	Drainage area	Pumping	7,275	482,000	By arbitration in 1872
Perth	26,356	Perth Water Works Commissioners	The Lord Provost	River Tay	Pumping to a high level, then by gravitation	—	—	"Old Commissioners," dating from 1829, were dissolved by the Perth Water Act, 1877
Rotherham	24,000 (now 32,000)	Corporation	E. Kelsey	Drainage area and springs	Pumping	7,193	750,000	On terms agreed, but principally constructed by Local Authority since 1855

LINCOLN.—The transfer arose out of the company applying to Parliament to raise £40,000 new capital. The corporation, however, opposed the company's Bill, and agreed to purchase the undertaking under the following agreement:—

"The company hereby contract and agree to sell and dispose of to the local board at such price as shall be fixed by arbitration as hereinafter provided for, and the local board, for the consideration aforesaid, hereby contract and agree to purchase at the price which shall be so fixed the undertaking of the company, in which term are included all works, reservoirs, drains, aqueducts, watercourses, conduits, main, service, and other pipes, water-valves, air vessels, stop-cocks, engines, apparatus, implements, utensils, and plant of every description now belonging to or used or held by the company; and also all the freehold and leasehold messuages, lands, tenements, and hereditaments which have been acquired, and are now held by or belong to the company, and all the other property and effects, rights and privileges of the company, and all the incidents and adjuncts of the said undertaking."

Statistics of Water Undertakings under the Management of Local Authorities.

nt paid by Local Authority.	Amount of Capital now engaged in the Undertaking.	Net Profit on Working for the Year.			Public or Special Rate levied in support of Undertaking.	Domestic Rate, Scale on Rental or Rateable Value.	Name of Engineer in charge of Works.
		Paid to Redemption Fund.	Paid to Boro' Fund or Relief of Rates.	Paid to Reserve, Contingency Fund, or Balance.			
£63,827	£81,906 5*s.* 1*d.*	£ *s.* *d.* 615 8 0	£ *s.* *d.* 542 17 3	£ *s.* *d.* —	None	1*s.* in the £ 9*d.* per 1,000 galls.	H. Teague
		£1,158 5*s.* 3*d.* 25th March, 1880					
nal value when ınsferred to mmissioners ,830 19*s.* 6*d.*	£39,676 9*s.* 11*d.*	407 4 10	No profits made.	—	1*d.* per £ on the rental	8*d.* in the £ on houses, 4*d.* on other rents and on outside area, 1*s.* on houses and 6*d.* on other rents	J. Peattie
		£1,077 6*s.* 11*d.* 30th September, 1879					
£123,000 Total cost)	£123,000	2,065 0 0 (1879)	—	—	£1,895 transferred from Gas profits for deficit in 1878-79.	7 per cent. on rateable value	L. Berry, *Resident Engineer* J. Mansergh, *M. Inst. C.E., Consulting Engineer*

The Lincoln Water Works' capital included—		Dividend.
720 Shares, at £25, at 10 per cent.	£18,000	£1,800
360 ,, ,, ,, 7½ ,,	9,000	675
	£27,000	£2,475

There was also a bond debt of £7,200. The award—£63,827—includes the bond debt, so the company received £56,627 for their paid-up capital. This is at the rate of nearly 23 years' purchase of the statutory dividends. The company were dividing full dividends in 1871.

PERTH.—By the Perth Water Act of 1877 the Commissioners were authorized to purchase by agreement or arbitration the Bridgend of Perth Water Company, the Earl of Kinnoull's works, and to construct new Water Works. An item of £1,000 on account to "engineer," treated as part of annual expenditure, balances the account with an excess of expenditure of £329 7*s.* 11*d.* If this amount were charged to capital there would be a balance of £1,077 6*s.* 11*d.*, from which £407 10*s.* has been paid to redemption of capital. The new water works, including Parliamentary expenses, have cost £27,263 6*s.* 5*d.*

Statistics of Water Undertakings under the Management of Local Authorities.

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Dewsbury	24,773 (now 32,000)	Corporation	Fredk. Firth (*Alderman*)	Drainage area	Gravitation	6,000	750,000	Not purchased. New works constructed under the provisions of the Dewsbury and Heckmondwike Water Works Act, 1876
Scarborough	24,259	Corporation	G. Porrett (*Alderman*)	Wells	Pumping	7,000	800,000	On terms agreed under the provisions of the Scarborough Water Act, 1878
Batley	20,871	Corporation	J. T. Marriott	Drainage area	Gravitation	5,500	350,000 (Domestic supply 1,000,000 including mills)	Under Acts of Parliament obtained in 1871 and 1878, the Corporation constructed the works

SCARBOROUGH.—The transfer of the undertaking to the corporation was effected by the "Scarborough Corporation Water Act, 1878." The company's share capital was £65,000; their mortgage debt, £17,100; their dividends were restricted to 9 per cent. on £35,000, and 7½ per cent. on £30,000. The consideration paid by the corporation (in addition to taking over all debts) was the issue to the shareholders of perpetual annuities equal to the maximum dividends payable under the Companies' Acts. The company had

Statistics of Water Undertakings under the Management of Local Authorities.

aid by Local thority.	Amount of Capital now engaged in the Undertaking.	Net Profit on Working for the Year.			Public or Special Rate levied in support of Undertaking.	Domestic Rate, Scale on Rental or Rateable Value.	Name of Engineer in charge of Works.
		Paid to Redemption Fund.	Paid to Boro' Fund or Relief of Rates.	Paid to Reserve, Contingency Fund, or Balance.			
—	£184,164 (about)	£ s. d. 2,840 0 0 12th Oct. 1880	£ s. d. —	£ s. d. —	1s. in the £	On rateable value — £ £ s. 10, 0 12 50, 1 10 100, 3 0 Meter rate 6d. per 1,000 galls.	J. F. Bateman, *M. Inst. C.E.*
		No profits. 31st August, 1879					
nuities on £35,000 on £30,000 00 per annum ge £17,100 ten over)	Annuity Capital £65,000 Loan £17,500	—	—	—	None	Where the rental is £5 per annum and under, 5s.; do. do. above £5, at and after the rate of 1s. for each £ of value according to the valuation of the Poor Rate	V. Fowler, *Manager* W. Millhouse, *Assistant Manager* E. Filliter, *M. Inst. C.E.*, *Consulting Engineer*
—	£265,921 4s. 2d.	None	None	—	6d. in the £	Annual Value. Rent per An. £ £ s. 10, 0 12 20, 1 0 50, 1 10 80, 2 6	Messrs. Bateman, Hill, & Bateman, *M.M. Inst. C.E.*
		No profit. Rate in aid					

paid maximum dividends for some years. The original proposal of the late company to procure a soft-water supply from Harwood Hill has been abandoned by the corporation, and the present scheme for a new supply is to sink deep wells into the oolitic measures. This, under the superintendence of Mr. E. Filliter, has already been attended with great success, a bore-hole near Seamer Junction yielding a supply of 500,000 gallons a day. The total cost of these works will not exceed £20,000.

Statistics of Water Undertakings under the Management of Local Authorities.

Name of Town	Population by last Census.	Corporation, Local Board of Health, or Improvement Commissioners.	Chairman of Water Committee.	Source of Supply—from a River, Drainage Area, or from Wells.	Nature of Supply—Pumping or Gravitation.	Number of Houses Supplied.	Average Daily Supply in Gallons.	Under establis acqu compulso Terms a or Arbitr
Tunbridge Wells	19,410	Improvement Commissioners acting as Local Board	Thos. Barton	Springs	By pumping and gravitation	2,951	313,322	On t agree 18
Doncaster	18,768	Corporation	R. E. Clark (*Alderman*)	River at present, new works in course of construction, to be opened shortly	Pumping, new works in progress, for gravitation	4,200	622,000	Alway longed Corpor
Leigh (Lanc.)	17,623	Leigh and Hindley Local Boards	James Thorp	Drainage area	Gravitation	3,000	100,000	Under Leigh Hindley Boards 187
Bedford	16,851	Corporation	Nil	Wells	Pumping	3,795	400,000	By arbitr in 18

TUNBRIDGE WELLS.—There is a further amount of capital—£15,700—the interest on which, together with the instalments of principal, are payable out of the general district rate.

LEIGH (LANC.).—The Leigh and Hindley Local Boards obtained the "Leigh and Hindley Local Boards Water Act, 1876," empowering them to take over the powers of the

Statistics of Water Undertakings under the Management of Local Authorities.

ınt paid by Local Authority.	Amount of Capital now engaged in the Undertaking.	Net Profit on Working for the Year.			Public or Special Rate levied in support of Undertaking.	Domestic Rate, Scale on Rental or Rateable Value.	Name of Engineer in charge of Works.
		Paid to Redemption Fund.	Paid to Boro' Fund or Relief of Rates.	Paid to Reserve, Contingency Fund, or Balance.			
£120,000	£95,875	£ s. d. 670 0 11	£ s. d. —	£ s. d. —	None	Rental per An. £ £ p.c. 20 to 40, 7 40 ,, 60, 6½ 60 ,, 80, 6 80 ,, 100, 5½ over £100, 4 p.c. on 2nd £100, 3 p.c. on 3rd do., 2½ on 4th, 5th, and 6th do. By meter 2*s.* 6*d.* per 1,000 gals.	Wm. Brentnall, *Assoc. M. Inst. C.E.*
		£1,795 11*s.* 4*d.* 25th March, 1879					
—	£170,000 (new Water Works)	—	—	—	7*d.* in the £ but will be advanced for the new supply	On rateable value	T. Anelay, *Borough Surveyor*
		Nil. 31st August, 1879					
—	£33,476 0*s.* 10*d.*	Nil	Nil	—	None	On rateable value and by meter	J. Timmins Geo. Dickinson, *Secretary*
		Loss from commencement £2,596 5*s.* 4*d.* 1879					
£24,168	—	—	—	—	None	£ £ *s.* *d.* not exceeding 5, 0 12 0 25, 0 16 0 50, 1 8 6 75, 2 1 0 100, 2 13 6 150, 3 18 6 200, 5 3 6 6*d.* every additional £ in excess	J. Lund, *Borough Surveyor*

"South Lancashire Water Act, 1871," with modifications in same. This scheme, however, they have agreed to abandon. The supply of water is now obtained by the two boards from the Bolton Corporation, but a considerable expenditure of money had been incurred before this decision was come to. The ultimate result, however, will be that the districts will be supplied from the Thirlmere scheme of the Manchester Corporation.

Statistics of Water Undertakings under the Management of Local Authorities.

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Tranmere	16,143	Corporation of B'head	H. Rawcliffe, J.P.	Wells in the new red sandstone	Pumping	4,076	460,000	Works constructed by the Tranmere Local Board in 1862, the value of mains laid by a Co. being ascertained by arbitration
Richmond (Surrey)	15,110	Improvement Commissioners	Sir Francis Burdett, Bart.	An artesian well	Pumping to a reservoir, thence by gravitation	3,000 (over)	413,810	Established, under the Public Health Act, 1875, sec. 51, in 1877

RICHMOND (SURREY).—The water works have lately been erected by the vestry and their engineers, Messrs. Russ and Minns, under circumstances which are matters of public notoriety. It will suffice to recall that Richmond was originally supplied with water by a company styled the Richmond Water Works under the statutory powers of an Act of Parliament passed in 1835. The water was partly obtained from the Thames and an artesian well; it did not, however, prove satisfactory in point of purity; and it is remarkable that in 1852 the West Middlesex Water Company obtained an Act to supply Richmond, but never took any steps for doing so. The Richmond Works in 1860 were ultimately disposed of to the Southwark and Vauxhall Water Company for the sum of £16,500; and this company, having disposed of the plant of the former undertaking, commenced to supply the town from their own mains. It is a fact that they repeatedly appealed to Parliament, but never succeeded in establishing statutory rights to the supply, in default of which they took, in virtue of a clause in their agreement with the Richmond Company, transfers of all the shares of that company.

In 1873 the vestry, dissatisfied with the insufficiency of the supply and the charges, wished to take the supply of water into their own hands, but the Southwark and Vauxhall

Statistics of Water Undertakings under the Management of Local Authorities.

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		Paid to Redemption Fund.	Paid to Boro' Fund or Relief of Rates.	Paid to Reserve, Contingency Fund, or Balance.			
		£ s. d.	£ s. d.	£ s. d.			
—	£35,449 11*s.* 5*d.*, £7,921 13*s.* 10*d.* having been written off for Mortgages repaid	646 9 3	737 2 8	—	No public rate	On rateable value 5 p.c. per annum	W. A. Richardson, C.E.
		£1,383 11*s.* 11*d.* 25th March, 1879					
—	£44,000	—	—	—	None	Rate under Public Health Act, 1875, sec. 56, and by meter to Breweries, &c.	W. G. Pierce, *Resident Engineer*
		Nil. 1879-80					

declined to sell their mains. The vestry thereupon very properly proceeded with works of their own, the Local Government Board authorizing them to borrow £28,000 for that purpose. The company then sought an injunction and next cut the supply off in 1877, but in the meantime the Water Supply Committee of the Richmond Vestry, advised by an able lawyer in the person of their clerk, Mr. Senior, ultimately overcame all opposition, completed their new supply with artesian wells sunk into the chalk, and have ever since supplied the town with water of exceptional purity. Of the capital, £28,000 was borrowed from the Public Works Loans Commissioners, repayable with interest at 3½ per cent. by instalments over thirty years, the remainder being raised by the issue of debentures created by the authority of the Local Loans Act, 1875, and repayable, some in twenty years and some in thirty years, by a certain number of debentures being drawn yearly, which debentures bear interest at 4 per cent., payable by way of coupons attached thereto. As soon as the cost of the legal expenses incurred through the recent litigation is disposed of, it is expected that a domestic rate of 8*d.* in the £ charged on the rateable value of consumers' houses will meet all working expenses, together with annual repayment of capital and interest, as against something like 1*s.* 4*d.* or 1*s.* 6*d.* in the £ previously charged by the Southwark and Vauxhall.

Statistics of Water Undertakings under the Management of Local Authorities.

Name of Town.	Population by last Census.	Corporation, Local Board of Health, or Improvement Commissioners.	Chairman of Water Committee.	Source of Supply—from a River, Drainage Area, or from Wells.	Nature of Supply—Pumping or Gravitation.	Number of Houses Supplied.	Average Daily Supply in Gallons.	Undertaking established or acquired compulsorily, on Terms agreed, or by Arbitration.
Dunfermline	14,963	Corporation	The Provost of the Burgh (Jas. Walls)	Stream and Drainage area	Gravitation	1,638 (by last census)	560,000	Acquired on terms agreed on in 1866
Taunton	15,466	Corporation	T. Hawkins	Springs	Gravitation	2,000	120,000	Purchased from Water Company in 1877 under the provisions of the Public Health Act, 1875
Bury St. Edmunds	15,000	Corporation	Jas. Floyd	Wells	Pumping	1,400	250,000	Works small, and erected about 15 years ago for sanitary purposes only
Wallasey	23,000	Local Board	E. Davies	Wells, new red sandstone	Pumping	—	800,000	—

DUNFERMLINE.—MEMO. AS TO DUNFERMLINE WATER WORKS.—The Glensherup scheme was commenced in 1877. The works are not yet completed, but partially in operation. The flow of water is 1¼ million gallons per diem. The estimated cost of scheme, £56,000; expenditure to date on works authorized by Act of 1876, £57,000; expended on extensions within Burgh, laying enlarged pipes, and other works not included in Parliamentary estimate, £3,000; borrowed money includes £35,000 at 4¼ per cent., and £35,000 at 4⅝ per cent.; total, £70,000. This is repayable by way of annuity in 30 years, the annual payments of principal and interest—£2,075 3*s* 2*d*., £2,106 4*s*. 2*d*.—amounting to £4,181 7*s*. 4*d*. The first instalment of principal is not payable till May 1882. In addition to above there are payable, annuity to shareholders of the Dunfermline Water Company, £296 14*s*., and interest on prior loans (£6,200 at 4 per cent.) £248—in all £544 14*s*.

The estimated annual expenditure for maintenance, including management, feu duties,

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		£ s. d.	£ s. d.	£ s. d.			
0,750, of which 3,350 was to re-in as a loan in petuity at 3 per cent. interest	£86,090	Nil	Nil	—	Public rate of 4*d.* in the £ on rental	Domestic rate of 1*s.* 6*d.* per on £ rental. Meter rate 4*d.* to 6*d.* per 1,000 gals.	William Chisholm
		Sept. 30th, 1879					
£20,000	£30,000	Interest and Redemption. 1,359 7 6	—	95 5 4	None	Rental. £ s. d. 4, 4 4 5, 5 0 15, 15 0 25, 20 0 50, 40 0 100, 60 0 200, 80 0 Meter rate 2*s.* to 1*s.* per 1,000 gals.	J. H. Smith
		£1,454 12*s.* 10*d.* (gross). 31st Aug. 1879			not exceeding		
—	£6,000	—	—	—	—	5 per cent. on rental	H. Siggers
—	£58,598	160 17 3	1,934 19 11½	—	None	6 per cent. on rental	E. H. Harris, *Assoc. M. Inst. C. E.*
		£2,095 17*s.* 2½*d.* 25th March, 1879					

and taxes, is £600, amounting to a gross estimated expenditure of £5,326 1*s.* 4*d.* The present receipts—a public rate of 4*d.* in the £, £808; domestic rate of 1*s.* 6*d.* in the £, £1,837; special charges for supplies for other than domestic purposes, £1,800—in all, £4,445. The income, however, is sufficient to meet the present expenditure; and it is fully expected that, by the time the repayment of instalments of principal of loans commences, there will be such a large increase of assessable rental and additional consumption of water, and consequent addition to the revenue, as will balance the expenditure. The Burgh of Inverkeithing and the villages of Charlestown, Limekilns, and Aberdour have got supplies from the works, and other towns and villages in the vicinity of Dunfermline are desirous of obtaining supplies. The corporation confidently expect that in the long run the expenditure is not likely to prove in excess of the resources of the undertaking.—July 1880.

TAUNTON.—The capital of the late water company was £12,000, but in addition to

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Ramsgate	24,000	Improvement Commissioners	Rev. E. G. Banks	Wells	Pumping	4,200	350,000	On terms agreed in 1877 after two protracted Parliamentary contests
Hyde, Newton, Godley, and Werneth	24,175	Local Board	A. P. Aspland	Drainage area	Gravitation	5,367	200,000	Private undertaking, acquired on terms agreed with owners in 1870
Newry	13,364	Town Commissioners	J. F. Erskine, J.P.	Drainage area	Gravitation	936	625,000	Old works purchased; new works established by Act of 1871, from which the present supply is obtained
Bridgwater	12,059	Corporation	Clifford Symons	Springs	Pumping	650	—	Works not yet completed

this they had borrowed £3,000 on mortgage at 4½ per cent. Their dividends shortly before the sale varied from 7 to 8 per cent.

NEWRY.—The supply is equal to any in Ireland, at high pressure reaching the highest houses in the township. The cost of the old works, £4,000; paid for Camlough Lake,

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t paid by Local uthority.	Amount of Capital now engaged in the Undertaking.	Net Profit on Working for the Year.			Public or Special Rate levied in support of Undertaking.	Domestic Rate, Scale on Rental or Rateable Value.	Name of Engineer in charge of Works.
		Paid to Redemption Fund.	Paid to Boro' Fund or Relief of Rates.	Paid to Reserve, Contingency Fund, or Balance.			
			£ s. d.	£ s. d.			
70,436	£85,000	Not chargeable till 1883	Nil	—	None	—	W. A. Valon, *Assoc. Inst. C.E.*
		£192 8s. 9d. 25th March, 1880					
1 17s., includ- egal charges	£26,395	£1,185	—	—	None	Domestic rate 1s. in the £ per ann. upon the Poor-rate assessment	Joseph Mitchell
		£795 2s. 1879-80					
£4,000	£27,000	Interest and Redemption. £1,300	Nil	—	None	1s. in the £ 6d. mills and stores, Meter supply 1s. to 6d. per 1000 gals.	J. L. D. Meares
		£1,373 10s. 4d. (gross). 31st Dec., 1879					
—	£33,000	—	—	—	Not yet levied	Annual Rent per ann. value. not exceeding £10, 8s. 8d. Beyond £10, 5 p.c. on net ann. value. Meter Supply 1s. 6d. per 1,000 gals.	J. Parker, *Manager*, T. and C. Hawkesley, *MM. Inst. C.E.*, *Engineers*

delivered at the borough boundaries, £12,000. The Parliamentary cost for the Bill of 1871 was over £8,000, part of which was paid by the part promoters, the owners of the "lake"; the balance, up to £27,000, was expended on the distributory system. The water for all sanitary purposes, watering streets, &c., is not charged for.

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Leek	11,331	Improvement Commissioners	John N. Platt	Drainage area	Gravitation	2,740	350,000	Origina purchase terms agr from the of Macc field
Warwick	11,001	Corporation	F. W. Arkwright	Adits driven into a running sand	Gravitation	—	270,000	Establisl by Corp tion
Pemberton	10,374	Local Board	J. Lamb, Wigan	Drainage area	Gravitation	300	—	No Wat works previous 1875
Ossett-cum-Gawthorpe	10,000	Local Board	Jos. Ellis	From the hills above Holmfirth	Gravitation	2,226	150,000	Works c structed 1877

PEMBERTON.—The works are only just beginning to pay anything. The board commenced to supply water on the 1st May, 1880. Pemberton had no water works previous to 1875. In that year they obtained an Act, and in 1878 it was amended by the Local Government Board. The amendment not being sufficient, and the Local Government Board not being willing to move further, Parliament was again applied to in 1879, and an Act was then obtained, which has enabled the board to partially complete their works. The water at present is from an old worked-out quarry in Billinge and a brook adjoining.

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		Paid to Redemption Fund.	Paid to Boro' Fund or Relief of Rates.	Paid to Reserve, Contingency Fund, or Balance.			
£11,000	£10,950 (Bonded debt)	£ s. d. 690 9 6	£ s. d. —	£ s. d. —	None	Mar. 1879, 11*d.* in the £ on ann. value; since reduced to 10*d.*	Thos. Frost
		£1,028 2*s.* 8*d.* 25th March, 1879					
—	New Water Supply cost £26,000	—	—	—	—	On the rental; meter supply 6*d.*, 7*d.* & 8*d.* per 1,000 gals.	T. Broughton
;t of land and .l expenses in ıulsorily taking e £25,000 in 1878	£75,000	600 0 0	—	—	2*s.* in the £	3*d.* per week under £8 rental; other houses average 1*s.* 9*d.* in the £ per an. Trade purposes 1*s.* 6*d.* per 1,000 gals.	G. Heaton, Wigan
		1879–80					
—	£20,000	Nil	Nil	280 0 0	None	Ann. Rent value. per ann. £ s. not exceeding 2½, 10; 5, 15; 10, 20; 25, 26; 60, 42 and 2*s.* per ann. for every £5 additional value. Meter supply 1*s.* 2½*d.* to 8*d.* per 1,000 gals.	C. Smith, *Manager.* M. McCulloch Paterson, *Assoc. M. Inst. C.E.*
		£280. 1879					

OSSETT-CUM-GAWTHORPE.—The works constructed in 1877 by Mr. McCulloch Paterson, C.E., consist of a line of pipe conduit, a covered service tank, and high and low level distributing pipes. "The supply is purchased in bulk from the Batley Corporation, and is delivered by them at their Staincliffe service tank, three miles west of Ossett, at the price of 8*d.* per 1,000 gallons on the quantities specified further on, the period of agreement being only 10 years. In quality the water is not to be excelled in Yorkshire; it is gathered from the Millstone grit formation, about 15 miles to the south-west, upon a most

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Bishop Auckland	11,000	Local Board of Health	R. Bowser	River Wear	Pumping	2,150	300,000	On ter agreed in
Rugby	10,000	Local Board of Health	Rev. C. Elsee	River Avon part and Barby Road collecting grounds	Pumped into tank and delivered by gravitation	2,000	200,000	Establis under Public H and Lo Governr Acts and Rugby V Works. 1863
Ely	6,000	Local Board of Health	Rev. G. Hall, J.P.	River Ouse	Pumping	1,300	235,000	—
Newport (Isle of Wight)	9,000	Corporation	H. Orchard, J.P.	Springs and a well	Pumping from well, gravitation, from springs	1,600	200,000	On ter agreed in

precipitous area above Holmfirth, on the borders of Cheshire, forming the north-eastern slope of the same ridge of hills which supply Manchester." The foregoing is taken from Mr. McCulloch Paterson's interesting and instructive account of the "Testing of the pipes and pipe-joints of the Ossett Water Works" (F. N. Spon). The quantities of water which the Ossett Local Board are empowered to take under their agreement are 150,000 gallons per day, increasing every year by 25,000 gallons per day, until in the tenth year the amount reaches 300,000 gallons.

ELY.—The water supply to the inhabitants is simply defrayed out of the general rates, and no water rate is separately levied.

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		£ s. d.	£ s. d.	£ s. d.			
£6,800	£3,048	—	—	90 0 0	None	8*d.* in the £. By meter 6*d.* per 1,000 gals.	R. Lindsay
		£90. 1880					
—	—	—	—	—	—	On rateable value. By meter 9*d.* per 1,000 gals.	W. Stewart, *Surveyor*
—	—	—	—	—	Charged in the general district rates	None	J. Bowen, *City Surveyor* Henry Tomlison, *M. Inst. C.E.*, *Consulting Engineer*
£8,225	£14,400	282 18 3	—	—	None*	No fixed rate. Meter rate 1*s.* 6*d.* to 8*d.* per 1,000 gals.	J. Cogger, Priory Mill, Carisbrooke
		£269 7*s.* 11*d.* 29th Sept., 1879					
		* Interest and part principal are charged to general district rate—*i.e.*, £450					

NEWPORT (ISLE OF WIGHT).—The Newport (Carisbrooke) Water Company, having succeeded in obtaining a provisional order in 1875 confirming their statutory rights in their undertaking, offered it subsequently for £8,500 to the corporation. They agreed ultimately to take £8,225, and this arrangement was confirmed in the Newport Borough Act, 1876. This purchase was reported to be thus distributed :—

135 Shares at £35	£4,725	£8,225.
Mill belonging to the Company	2,500	
Expenses of Provisional Order	1,000	

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Ulverstone	7,607	Local Board	J. Park	Drainage area	Gravitation	1,855	350,000	On te agreed; firmed Ulverst Improve Act, 18
Aberystwith	7,000	Town Council, acting as the Urban Sanitary Authority	Peter Jones, J.P.	From springs and wells at present	Pumping at present	1,400	160,000	New w now in co of const tion
Devizes	6,840	Urban Sanitary Authority	W. Brown, J.P.	From a well	Pumping	350	—	Works c structed Sanitary thority, 1
Enniskillen	6,000	Town Commissioners	T. R. Whitley	Drainage area	Gravitation	800	200,000	Partly c pulsorily partly mutua agreem
Llangollen	3,000	Local Board	E. Roberts	River	Gravitation	—	100,000	—

ABERYSTWITH.—The authorities have recently adopted a scheme for supplying the town with water by gravitation from a source of a river or lake called "Llynllygad Rheidol." The work is now being proceeded with; the cost will be upwards of £16,000. The quantity is abundant, will furnish an inexhaustible supply, and the quality is pronounced by Dr. Frankland to be one of the finest and purest in the United Kingdom. The engineer is Mr. Thos. S. Stooke, Assoc. M. Inst. C.E.

DEVIZES.—These water works have been lately successfully completed. They were *designed by Mr.* Henry Tomlison, M. Inst. C.E., the engineer to the Cambridge Water *Works. The* site of the well which has been sunk for the corporation is in a field on the

Statistics of Water Undertakings under the Management of Local Authorities.

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		Paid to Redemption Fund.	Paid to Boro' Fund or Relief of Rates.	Paid to Reserve, Contingency Fund, or Balance.			
		£ s. d.	£ s. d.	£ s. d.			
£16,000	£21,200	383 7 6	None	—	General district rate for £383 7s. 6d.	5 per cent. on rateable value. Meter rate 1s. per 1,000 gals.	John Swan
		£53 10s. 11d. 25th March, 1879					
—	—	—	—	—	Water rate 1s. 6d. in the £	—	J. Morgans. *Manager*, T.S.Stooke, *Assoc. M. Inst. C.E.*, *Consulting Engineer*
—	£11,000	236 2 5	—	—	None. Deficiency carried to the General Account of the Sanitary Authority	5 per cent. on rental of houses supplied. Meter rate 1s. 3d. to 1s. per 1,000 gals.	J. W. Holloway, *Manager* Henry Tomlison, *M. Inst. C.E.*, *Consulting Engineer*
		£248 16s. (deficiency). 25th March, 1880					
£1,000	£10,000	Instalment and interest. 462 0 0	—	—	—	1s. 4d. per £ on valuation to 1879, since 1s.	John Wray
		£791 8s. (gross). 31st July, 1879					
—	£4,410	—	—	—	None	1s. in the £ upon the rateable value. By meter 1s. 3d. to 9d. per 1,000 gals.	R. T. Jones

west side of the high road to London, and distant from the market place, Devizes, about 4½ miles. The well, sunk in the chalk to a depth of about 105 feet, has since been increased to 120 feet, as originally intended, and with the result that a practically inexhaustible supply has been tapped. Its internal diameter for 32 feet (steined with 9-inch work) is 8 feet, and for the remainder of the depths (not steined) it is 7 feet. The engines—a pair of high-pressure non-condensing steam engines, with pumps, boilers, &c.—when working together are capable of lifting easily, and at a moderate speed, 10,250 gallons of water per hour through a 7-inch rising main, about 1,900 yards long, to a total vertical head of 135 feet. Each engine with its pump or pumps, if working singly, is capable of lifting 5,500 gallons per hour to a total vertical head of 126 feet.

LONDON WATER SUPPLY.

Statistics of Water Undertakings under the Management of Local Companies.

1.—EAST LONDON WATER WORKS COMPANY.

2.—NEW RIVER WATER WORKS COMPANY.

3.—SOUTHWARK AND VAUXHALL WATER COMPANY.

4.—LAMBETH WATER WORKS COMPANY.

5.—GRAND JUNCTION WATER WORKS COMPANY.

6.—WEST MIDDLESEX WATER WORKS COMPANY.

7.—CHELSEA WATER WORKS COMPANY.

8.—KENT WATER WORKS COMPANY.

Statistics of London Water Undertakings under the Management of Local Companies.

EAST LONDON WATER WORKS SUPPLY.

		1866.	1879.*
1.	Name of principal Districts supplied	Upper and Lower Clapton, Bethnal Green, Homerton, Old Stratford, Stratford-le-Bow, Bromley, Limehouse, Plaistow, Westham, Leytonstone, &c.	Same
2.	Estimated Population within Districts supplied	672,000	920,595
3.	Chairman of Water Company . .	Wm. Liddiard	Octavius E. Coope, M.P.
4.	Source of Supply . . .	River Lee at Higham Hill, nine miles above the junction of the Lee and Thames	Same
5.	Number of Houses supplied . .	91,975	118,910
6.	Estimated Rateable Value of Houses	£1,870,760	—
7.	Average Daily Supply in gallons .	19,380,739	29,041,000
8.	Amount of Ordinary Share Capital engaged in Water Undertaking	£1,400,000	£1,624,710
	Debentures and Loans . .	Nil	395,200
	Total Capital . . .	£1,400,000	£2,019,910
9.	Gross Profit on Working for the year ending	£87,166 2*s.* 7*d.*	£114,512 1*s.* 8*d.*
	Dividends on Share Capital .	£82,900 4*s.* £6 16*s.* 2*d.* and 4½ per cent.	£107,741 16*s.* 5*d.* 6½ per cent.
	Interest on Debentures and Loans	Nil	£17,201 12*s.* 4*d.*
	Balance	£4,265 18*s.* 7*d.*	—£10,431 7*s.* 1*d.*
10.	Domestic Rate, Scale on Annual Value	5 per cent. on Annual Value	Same
11.	Meter Supply, Scale per 1,000 gallons	6*d.*, 7*d.*, 8*d.*, 9*d.* per 1,000 gallons	Same
12.	Name of Secretary. . . .	Elihu Bates	Elihu Bates
	,, Engineer	Ch. Greaves	Geo. Seaton, *M. Inst. C.E.*

* No return furnished by Company. Compiled from independent but reliable sources.

Statistics of London Water Undertakings under the Management of Local Companies.

NEW RIVER WATER WORKS SUPPLY.

	1866.	1879.
1. Name of principal Districts supplied .	Hampstead, Kentish Town, Highgate, Hornsey, St. Pancras, City of London, Holborn, Dalston, Highbury, Stoke Newington, Upper Holloway	City of London, Strand Union, St. Giles', Holborn Union, Shoreditch, St. Pancras, Islington, Stoke Newington, West Hackney, Hornsey, Hampstead, Highgate and parts of Tottenham, Edmonton, Whitechapel Union, St. Anne's, Westminster, St. James', Westminster, &c.
2. Estimated Population within Districts supplied	800,000	1,000,000
3. Chairman of Water Company . .	John Miles, *Governor*	John Miles, *Governor*
4. Source of Supply	The Chadwell Springs, between Hertford and Ware, from wells in the chalk near Ware, Hoddesdon, and Cheshunt, and from the River Lee	Same
5. Number of Houses supplied . .	112,964	129,554
6. Estimated Rateable Value of Houses	£4,054,400	—*
7. Average Daily Supply, in gallons .	22,898,769	27,198,000
8. Amount of Ordinary Share Capital engaged in Undertaking	£1,608,618	£2,019,958
Debentures and Loan Capital .	1,000,800	1,000,000
Total Capital . .	£2,609,418	£3,019,958
9. Gross Profit on Working for the year ending	£134,937 18 10	£250,840 14 3
Dividends on Share Capital .	92,880 0 0 £6 2*s.* 2½*d.* per cent.	210,602 7 9 ½ Year (Mids.) £9 19*s.* 11*d.* per cent. per annum. ½ Year (Xmas.) £10 17*s.* 1*d.* per cent. per annum.
Interest on Debentures and Loans	£41,545 10 6	£39,354 8 0
Balance	512 8 4	—
10. Domestic Rate, Scale on Annual Value	Not exceeding £200, 4 p. c. Beyond 3 p. c.	Same
11. Meter Supply, Scale per 1,000 gallons	6*d.*, 6½*d.*, 7*d.*, and 7½*d.*	Same for non-domestic purposes, if taken regularly (41st sec.), other meter supplies by agreement under section 40.
12. Name of Secretary. . . .	Alexander Inglis	Alexander Inglis
,, Engineer	James Muir	James Muir, *M. Inst. C.E.*

* The Company omit this item in their return.

Statistics of London Water Undertakings under the Management of Local Companies.

SOUTHWARK AND VAUXHALL WATER WORKS SUPPLY.

		1866.	1879.
1.	Name of principal Districts supplied	Southwark, Vauxhall, Battersea, Clapham, Camberwell, Peckham, Rotherhithe, Putney, Wandsworth, Barnes, Kew, Mortlake, Richmond, and Petersham	Same, except Richmond
2.	Estimated Population within Districts supplied	468,540	664,977
3.	Chairman of Water Company . .	—	Alderman Henry C. Knight
4.	Source of Supply	The Thames above Hampton	Same
5.	Number of Houses supplied . .	73,980	86,309
6.	Estimated Rateable Value of Houses supplied	£1,413,540	—*
7.	Average Daily Supply in gallons .	12,502,000	24,029,174
8.	Amount of Ordinary Share Capital engaged in Water Undertaking	£685,440	£868,800
	Debentures and Loans . .	415,000	921,200
	Total Capital . . .	£1,100,440	£1,790,000
9.	Gross Profit on Working for year ending	£48,844 15*s.* 9*d.*	£95,763 4*s.* 1*d.*
	Dividends on Share Capital .	£35,359 12*s.* 3*d.* 6½, 5, and 4½ per cent.	£52,570 6*s.* 2*d.* 6 per cent.
	Interest on Debentures and Loans	£14,663 9*s.* 9*d.*	£43,132 17*s.* 7*d.*
	Balance	—	—
10.	Domestic Rate, Scale on Annual Value	5 per cent. on Annual Value	Same
11.	Meter Supply, Scale per 1,000 gallons	6*d.*, 7*d.*, 8*d.*, and 9*d.* per 1,000 gallons.	Same
12.	Name of Secretary	Chas. Robinson	Alfred Jelley
	,, Engineer	Jos. Quick, *M. Inst. C.E.*	Thos. W. Rumble, *M. Inst. C.E.*

* The Company omit this item in their return.

Statistics of London Water Undertakings under the Management of Local Companies.

LAMBETH WATER WORKS SUPPLY.

		1866.	1879.
1.	Name of principal Districts supplied.	Lambeth, Camberwell, Dulwich, Brixton, Balham, Upper Tooting, Streatham, Norwood, Crystal Palace, Mitcham, Kingston, Thames Ditton, and Long Ditton	Same
2.	Estimated Population within Districts supplied	225,000	445,942
3.	Chairman of Water Company . .	—	P. Pleydell Bouverie
4.	Source of Supply	The Thames, near Long Ditton	Same
5.	Number of Houses supplied . .	37,203	61,381
6.	Estimated Rateable Value of Houses supplied	£1,240,822	—*
7.	Average Daily Supply in gallons .	8,950,000	13,668,000
8.	Amount of Ordinary Share Capital engaged in Water Undertaking	£532,130	£1,182,860
	Debenture and Loans . .	204,115	214,055
	Total Capital . . .	£736,245	£1,396,915
9.	Gross Profit on Working for year ending	£39,723 9*s.*	£87,130 5*s.* 9*d.*
	Dividends on Ordinary Share Capital	£29,732 14*s.* 8*d.* 6 per cent.	£72,852 15*s.* 2*d.* 6½ per cent.
	Interest on Debentures and Loans	£9,139 17*s.* 10*d.*	£9,335 1*s.* 7*d.*
	Balance	—	—
10.	Domestic Rate, Scale on Annual Value	Not exceeding £20, £7 10*s.* per cent. Exceeding £20 and not exceeding £40, £7 per cent. Exceeding £40 and not exceeding £60, £6 10*s.* p.c. Exceeding £60 and not exceeding £80, £6 per cent. Exceeding £80 and not exceeding £100, £5 10*s.* p.c. Exceeding £100, £5 p. c.	Same
11.	Meter Supply, Scale per 1,000 gallons	On terms mutually agreed.	Varies according to level
12.	Name of Secretary. . . .	W. S. Phipps	S. H. Louttit, *Assoc. Inst. C.E.*
	,, Engineer. . . .	—	John Taylor, *M. Inst. C.E.*

* The Company omit this item in their return.

Statistics of London Water Undertakings under the Management of Local Companies.

GRAND JUNCTION WATER WORKS SUPPLY.

		1866.	1879.*
1.	Name of principal Districts supplied.	Bayswater, S. James, Acton, Ealing, Brentford, Hanwell, Isleworth, Hounslow, Twickenham, Teddington, Hampton	Same
2.	Estimated Population within Districts supplied	242,118	362,565
3.	Chairman of Water Company . .	—	W. F. Higgins
4.	Source of Supply	The Thames above Hampton	Same.
5.	Number of Houses supplied . .	26,902	39,648
6.	Estimated Rateable Value of Houses supplied	£1,918,730	—
7.	Average Daily Supply in gallons .	9,317,055	12,493,807
8.	Amount of Ordinary Share Capital engaged in Water Undertaking	£700,000	£1,022,320
	Debentures and Loans . .	£150,000	£250,000
	Total Capital . . .	£850,000	£1,272,320
9.	Gross Profit on Working for year ending	£50,171	£81,808 13*s.* 5*d.*
	Dividends on Ordinary Share Capital	£49,271 8*s.* 8½, 7½, and 4 per cent.	£71,929 2*s.* 4*d.* 7½ per cent.
	Interest on Debentures and Loans	£4,028 15*s.* 7*d.*	£9,879 11*s.* 1*d.*
	Balance	—	—
10.	Domestic Rate, Scale on annual value	Not exceeding £200, 4 per cent.; beyond, 3 per cent.	Same
11.	Meter Supply, Scale per 1,000 gallons	6*d.*, 7*d.*, 8*d.*, and 9*d.*	Same
12.	Name of Secretary. . . .	Ernest O. Coe.	Ernest O. Coe
	,, Engineer	Jos. Quick, *M. Inst. C.E.*	A. Fraser, *M. Inst. C.E.*

* No return furnished by Company. Compiled from independent but reliable sources.

Statistics of London Water Undertakings under the Management of Local Companies.

WEST MIDDLESEX WATER WORKS SUPPLY.

	1866.	1879.
1. Name of principal Districts supplied .	Marylebone, Regent's Park, Portland Town, Kilburn, Kensal Green, Willesden, Cricklewood, and Hendon	Parts of the Parishes of St. Marylebone, St. Pancras, Paddington, Hampstead, Kensington, Hammersmith, Fulham, Chiswick, Willesden, and Hendon
2. Estimated Population within Districts supplied	276,500	405,465
3. Chairman of Water Company . .	Major C. Lestock Boileau	Major C. Lestock Boileau
4. Source of Supply	The Thames above Hampton	Same
5. Number of Houses supplied . .	36,500	53,534
6. Estimated Rateable Value of Houses supplied	£2,212,000	—*
7. Average Daily Supply, in gallons .	8,208,168	10,439,566
8. Amount of Ordinary Share Capital engaged in Water Undertaking	£798,571	£998,631
Debenture and Loans . .	Nil	Nil
Total Capital . . .	£798,571	£998,631
Gross Profit on Working for the year ending	£71,781 7*s.* 11*d.*	£108,803 8*s.* 8*d.*
Dividends on Ordinary Share Capital	£72,349 12*s.* 8*d.*	†£99,863 2*s.*
Interest on Debentures and Loans	£5 15*s.* per Share of £61	10 per cent.
Balance	Nil	Nil
	—	
10. Domestic Rate, Scale on Annual Value	Not exceeding £200, 4 p. c. Beyond 3 p. c.	Same
11. Meter Supply, Scale per 1,000 gallons	6*d.*, 7*d.*, 8*d.*, and 9*d.*	Low Service. Quarterly Consumption. / Per 1,000 gals. / High Service. From 25,000 to 50,000 gallons 9*d.* From 50,000 to 100,000 gallons 8*d.* From 100,000 to 200,000 gallons 7*d.* All above 200,000 gallons 6*d.* 25 per cent. additional.
12. Name of Secretary. . . .	W. H. Whiffin	G. B. Hall
,, Engineer	W. B. Hack	Thos. Hack, *M. Inst. C.E.*

* The Company omit this item in their return, and explain that no total record is kept.

† The Company also paid in 1879 the sum of £24,556 10*s.* on account of back dividends.

Statistics of London Water Undertakings under the Management of Local Companies.

CHELSEA WATER WORKS SUPPLY.

	1866.	1879.*
1. Name of principal Districts supplied	Westminster, St. James' Park, Hyde Park, Fulham, Kensington Palace, Chelsea	The same
2. Estimated Population within Districts supplied	170,000	240,817
3. Chairman of Water Company . .	—	John Deedes
4. Source of Supply	The Thames, near Long Ditton	Same
5. Number of Houses supplied . .	26,900	29,700
6. Estimated Rateable Value of Houses supplied	£1,228,000	—*
7. Average Daily Supply in gallons .	8,000,000	8,855,800
8. Amount of Ordinary Share Capital engaged in Water Undertaking	£615,600	£615,600
Debentures and Loans . .	170,000	537,100
Total Capital . . .	£785,600	£1,152,700
9. Gross Profit on Working for year ending	£40,940 4*s.* 1*d.*	£63,511 7*s.* 1*d.*
Dividends on Ordinary Share Capital	£32,812 4*s.* 6*d.* 5½ per cent.	£38,601 17*s.* 1*d.* 6½ per cent.
Interest on Debentures and Loans	£6,485 6*s.* 3*d.*	£24,909 10*s.*
Balance	£1,642 13*s.* 4*d.*	—
10. Domestic Rate, Scale on Annual Value	Not exceeding £200, 4 p. c. Beyond ,, 3 p. c.	Same
11. Meter Supply, Scale per 1,000 gallons	Terms mutually agreed upon	Same
12. Name of Secretary	Albert Gill	Albert Gill
,, Engineer	—	A. T. Simpson, *M.Inst.C.E.*

* No return furnished by Company. Compiled from independent but reliable sources.

Statistics of London Water Undertakings under the Management of Local Companies.

KENT WATER WORKS SUPPLY.

	1866.	1879.
1. Name of principal Districts supplied.	Deptford, Greenwich, Lewisham, Old Charlton, Woolwich, Eltham, Plumstead	Deptford, Greenwich, Charlton, Woolwich, Plumstead, Erith, Belvedere, Dartford, Greenhithe, Swanscombe, Hatcham, Blackheath, Lewisham, Lee, Kidbrooke, Eltham, Bromley, Chislehurst, Cray Valley, Swanley
2. Estimated Population within Districts supplied	237,068	286,398
3. Chairman of Water Company . .	—	Geo. Smith
4. Source of Supply	Wells in the chalk at Deptford, Charlton, Plumstead, Crayford, and Bromley.	Same
5. Number of Houses supplied . .	33,864	48,684
6. Estimated Rateable Value of Houses supplied	£675,329	—*
7. Average Daily Supply in gallons .	6,150,000	8,209,740
8. Amount of Ordinary Share Capital engaged in Water Undertaking	£447,240	£626,849
Debentures and Loans . .	42,000	42,000
Total Capital . . .	£489,240	£668,849
9. Gross Profit on Working for year ending	£24,669 11*s.* 3*d.*	£59,917 5*s.* 3*d.*
Dividends on Ordinary Share Capital	£26,834 8*s.* 6 per cent.	£54,409 14*s.* 2*d.* First half-year, 8½ per cent.; second half-year, 9 per cent. per annum
Interest on Debentures and Loans	£2,016	£1,735
Balance	—	£3,772 11*s.* 1*d.*
10. Domestic Rate, on Annual Value .	Not exceeding £7, 8*s.* per annum; exceeding £7 but not exceeding £8, 9*s.* 6*d.* per annum; exceeding £9 but not exceeding £10, 12*s.* per annum; exceeding £19 but not exceeding £20, £1 4*s.* per annum; exceeding £45 but not exceeding £50, £2 10*s.* per annum; exceeding £80 but not exceeding £95, £3 16*s.* per annum; exceeding £95, 4 per cent. per annum	Same
11. Meter Supply, Scale per 1,000 gallons	On terms mutually agreed	Same Small supplies, with a minimum consumption guaranteed, 10*d.* per 1,000 gallons; large do., 7½*d.*
12. Name of Secretary. . . .	—	Alex. Dickson
,, Engineer. . . .	W. R. Morris.	Wm. Morris, *M. Inst. C.E.*

* The Company explain that they have no reliable estimate of the rateable value of the premises supplied.

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WATER SUPPLY.

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